

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 q
 Edition : 21.08.92
 Replaces : 09.91
 Test oil : ISO-4113

Combination no. : 0 402 046 827

Injection pump
 Pump designation : PES6P120A320RS3284
 EP type number : 0 412 026 749
 Governor
 Governor design. : RQ275/1050PA999-3
 Governor no. : 0 421 801 598

Customer-spec. information

Customer : RVI

Engine : MIDR/PR 062045

1st version kW : 186.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.6...5.0

Del.quantity cm³/ : 1.9...2.3

100 s: (1.6...2.6)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.3

Testing:
Speed rpm : 200
Minimum rack trave: 6.40
Speed rpm : 275
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.20
Speed rpm : 320...360

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 10.50...10.60
2nd speed rpm : 1050
Rack travel in m: 10.40...10.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.10...10.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.20
2nd pressure hPa : 200
Rack travel in m: 8.50...8.60
3rd pressure hPa : 360
Rack travel in m: 9.40...9.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 146.0...152.0
1000 s: (143.0...155.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 79.0...81.0
1000 s: (76.0...84.0)

BREAKAWAY
1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.16...5.00
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 l
 Edition : 21.08.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : D 402 046 828

Injection pump
 Pump designation : PES6P120A320RS3288
 EP type number : D 412 026 750
 Governor
 Governor design. : RQV275...1000PA995-2
 Governor no. : D 421 813 940

Customer-spec. information

Customer : RVI

Engine : MIDR 063540 M/3

1st version kW : 236.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 683 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45
 : (3.30...3.50)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 23.9...24.1

100 s: (23.6...24.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 2.3...2.7

100 s: (2.0...3.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1070

travel mm : 8.30...8.50

2nd speed rpm : 275

travel mm : 1.20...1.40

3rd speed rpm : 500

travel mm : 3.60...4.20

4th speed rpm : 750

travel mm : 5.70...6.10

5th speed rpm : 1450

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 239.0...241.0

1000 : (236.0...244.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATE_v SPEED

1st version
Control Lever
position degrees: 302...310

Testing:

1st rack travel in: 11.40
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 244...252

Testing:

Speed rpm : 200
Minimum rack trave: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...10.00
2nd pressure hPa : 280
Rack travel in m: 11.50...11.60
3rd pressure hPa : 160
Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1000

Del.quantity cm³/ : 225.0...231.0
 1000 s: (222.0...234.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
 1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
 1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...5.30
Del.quantity cm³/ : 23.0...27.0
 1000 s: (20.0...30.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 s
 Edition : 24.07.92
 Replaces : 10.91
 Test oil : ISO-4113

Combination no. : 0 402 046 830

Injection pump
 Pump designation : PES6P120A320RS3290
 EP type number : 0 412 026 751
 Governor
 Governor design. : RQ275/950PA999-4
 Governor no. : 0 421 801 612

Customer-spec. information

Customer : RVI

Engine : MIDR/PRO62045

1st version kW : 151.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.80...12.90

Del.quantity cm³/

100 s: (13.6...14.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/

100 s: (1.7...2.9)

Spread cm³ : 0.8

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 1000

Del.quantity : 139.0...141.0

1000 : (136.0...144.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1010...1025

2nd rack travel in: 4.00

Speed rpm : 1095...1125
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 150
Minimum rack trave: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 315...355

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.20...13.30
2nd speed rpm : 950
Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.95...10.90
2nd pressure hPa : 160
Rack travel in m: 11.20...11.30
3rd pressure hPa : 320
Rack travel in m: 12.10...12.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 153.0...159.0
1000 s: (150.0...162.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 99.0...101.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1010...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (8.00)

Remarks:

:
Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 24.07.92
 Replaces : 05.92
 Test oil : ISO-4113

Combination no. : 0 402 046 836

Injection pump
 Pump designation : PES6P120A320RS3303
 EP type number : 0 412 026 755
 Governor
 Governor design. : RQV275...1050PA1038K
 Governer no. : 0 421 815 313

Customer-spec. information

Customer : RVI

Engine : MIDR 062045 J/3

1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm³ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.1...5.3

Del.quantity cm³ : 1.9...2.3

100 s: (1.6...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1140

travel mm : 8.90...9.10

2nd speed rpm : 275

travel mm : 1.20...1.40

3rd speed rpm : 380

travel mm : 2.90...3.50

4th speed rpm : 740

travel mm : 6.00...6.40

5th speed rpm : 1480

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 7.90...11.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 268...276

Testing:

1st rack travel in: 9.90
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 238...246

Testing:

Speed rpm : 175
Minimum rack trave: 6.70
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 280...380

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.90...11.00
2nd speed rpm : 700
Rack travel in m: 10.00...10.20

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 131.0...137.0
1000 s: (128.0...140.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 046 837

Injection pump
 Pump designation : PES6P100A320RS3304
 EP type number : 0 412 006 702
Governor
 Governor design. : RGV350...1200PA1037K
 Governor no. : 0 421 815 312

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 210.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 038

Inlet press., bar : 2.50

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.35...3.45
 : (3.30...3.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 14.8...15.0

100 s: (14.6...15.2)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm³ : 0.6

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 350
	travel mm	: 1.40...1.60
2nd speed	rpm	: 500
	travel mm	: 3.20...3.60
3rd speed	rpm	: 800
	travel mm	: 11.80...12.20
4th speed	rpm	: 1265
	travel mm	: 8.70...8.90
5th speed	rpm	: 1460
	travel mm	: 10.40...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed	rpm	: 1200
Aneroid pressure h:	900	
Del.quantity	: 148.0...150.0	
1000	: (146.0...152.0)	

Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 12.50
 Speed rpm : 1240...1270
 2nd rack travel in: 4.00
 Speed rpm : 1430...1440
 4th rack travel in: 1550
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:

Speed rpm : 275
 Minimum rack travel: 7.20
 Speed rpm : 350
 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
 Torque control curve - 1st version
 1st speed rpm : 1200
 Rack travel in m: 13.50...13.60
 2nd speed rpm : 800
 Rack travel in m: 13.40...13.60
 3rd speed rpm : 650
 Rack travel in m: 12.80...13.20

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 800
Pressure hPa : 900
Rack travel mm : 13.40...13.60

Measurement Speed 1/min : 800

1st pressure hPa : -
 Rack travel in m: 8.10...8.50
 2nd pressure hPa : 240
 Rack travel in m: 9.60...9.70
 3rd pressure hPa : 455
 Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 900
 Speed rpm : 800
 Del.quantity cm³/ 1000 s: 159.0...163.0
 1000 s: (157.0...165.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm³/ 1000 s: 74.0...78.0
 1000 s: (72.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100
 Det.quantity cm³/ 1000 s: 135.0...175.0
 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
 Rack travel in mm : 5.90...6.10
 Del.quantity cm³/ : 21.0...25.0
 1000 s: (18.5...27.5)
 Spread cm³ : 6.00
 1000 s: (8.00)

Remarks: : NAVISTAR #1818499C91

Limit shutoff stop screw to 1.0 mm.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 1
 Edition : 24.07.92
 Replaces : 04.92
 Test oil : ISO-4113

Combination no. : 0 402 076 722

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534
 Governor no. : 0 421 833 275

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HF

1st version kW : 205.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm³/

100 s: (16.6...17.2)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/

100 s: (1.8...2.6)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 168.0...170.0

1000 : (166.0...172.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1195
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.80

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.50...12.60
2nd speed rpm : 750
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : 585
Rack travel in m: 11.10...11.20
2nd pressure hPa : 770
Rack travel in m: 12.20...12.60
3rd pressure hPa : 1200
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 174.5...178.5
1000 s: (172.5...180.5)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 117.5...121.5
1000 s: (114.5...124.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 20.0...24.0
1000 s: (18.0...26.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:
: JOHN DEERE # RE32035

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO 4113

Combination no. : 0 402 076 723

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...11COP2A534-
 1
 Governor no. : 0 421 833 276

Customer-spec. information

Customer : JOHN DEERE

Engine : 6076 AF & HF

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 2.5...2.9

100 s: (2.3...3.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 155.0...157.0

1000 : (153.0...159.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:
 1st rack travel in: 11.20
 Speed rpm : 1150...1160
 2nd rack travel in: 4.00
 Speed rpm : 1225...1235
 3rd rack travel in: 4.00
 Speed rpm : 1220...1250
 4th rack travel in: 1400
 Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
 position degrees: 20...28
Setting point w/out bumper spring
 Speed rpm : 400
 Rack travel in mm : 5.1

Testing:
 Speed rpm : 100
 Minimum rack trave: 19.00
 Speed rpm : 400
 Rack travel in mm : 5.50...5.70

TORQUE CONTROL
Torque control curve - 1st version
 1st speed rpm : 1100
 Rack travel in m: 12.20...12.30
 2nd speed rpm : 650
 Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version
Setting
 Speed rpm : 500
 Pressure hPa : 1200
 Rack travel mm : 13.40...13.60

Measurement
 Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 10.60...10.80
 2nd pressure hPa : 895
 Rack travel in m: 12.70...12.80
 3rd pressure hPa : 720
 Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 1200
 Speed rpm : 650
 Del.quantity cm³/ : 187.0...191.0
 1000 s: (185.0...193.0)
 Aneroid pressure h: -
 Speed rpm : 800

Del.quantity cm³/ : 118.0...122.0
 1000 s: (116.0...124.0)

BREAKAWAY
1st version
 1mm rack travel less than
 full load rack tr: 11.20
 Speed rpm : 1150...1160

STARTING FUEL DELIVERY
 Speed rpm : 100
 Del.quantity cm³/ : 90.0...110.0
 1000 s: (85.0...115.0)
 Rack travel in mm : 20.00...21.00

LOW IDLE
 Speed rpm : 400
 Rack travel in mm : 5.50...5.70
 Del.quantity cm³/ : 25.5...29.5
 1000 s: (23.0...32.0)
 Spread cm³ : 6.00
 1000 s: (8.00)

Remarks: : JOHN DEERE # RE32033

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 b
 Edition : 24.07.92
 Replaces : 05.90
 Test oil : ISO-4113

Combination no. : 0 402 076 727

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534-
 2
 Governor no. : 0 421 833 290

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 15.3...15.5

100 s: (15.1...15.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 153.5...155.5

1000 : (151.5...157.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:
1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.50
2nd pressure hPa : 510
Rack travel in m: 11.80...11.90
3rd pressure hPa : 645
Rack travel in m: 12.40...12.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 178.5...182.5
1000 s: (176.5...184.5)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 138.5...142.5
1000 s: (136.5...144.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks: : JOHN DEERE # RE32034

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 c
 Edition : 24.07.92
 Replaces : 02.90
 Test oil : ISO-4113

Combination no. : 0 402 076 728

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV425...1050P2A489-
 2
 Governer no. : 0 421 833 291

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 175.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm³/

100 s: (16.3...17.0)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/

100 s: (2.9...3.9)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h:

1200 Del.quantity : 166.0...168.0

1000 : (163.5...170.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:	Del.quantity cm ³ / : 157.0...161.0 1000 s: (154.0...164.0)
1st rack travel in: 11.40 Speed rpm : 1090...1100	
2nd rack travel in: 4.00 Speed rpm : 1160...1170	
4th rack travel in: 1250 Speed rpm : 0.30...1.40	
LOW IDLE 1	BREAKAWAY
Control lever position degrees: 20...28	1st version 1mm rack travel less than
Setting point w/out bumper spring	full load rack tr: 11.40
Speed rpm : 425	Speed rpm : 1090...1100
Rack travel in mm : 5.1	STARTING FUEL DELIVERY
Testing:	Speed rpm : 100
Speed rpm : 100	Del.quantity cm ³ / : 90.0...110.0
Minimum rack trave: 19.00	1000 s: (85.0...115.0)
Speed rpm : 425	Rack travel in mm : 20.00...21.00
Rack travel in mm : 5.50...5.70	LOW IDLE
Rack travel in mm : 2.00	Speed rpm : 425
Speed rpm : 610...670	Rack travel in mm : 5.50...5.70
TORQUE CONTROL	Del.quantity cm ³ / : 31.5...36.5
Torque control curve - 1st version	1000 s: (29.0...39.0)
1st speed rpm : 1050	Spread cm ³ : 6.00
Rack travel in m: 12.40...12.50	1000 s: (8.00)
2nd speed rpm : 600	
Rack travel in m: 13.60...13.80	
Aneroid/Altitude Compensator Test	Remarks: : JOHN DEERE # RE32888
1st version	Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.
Setting	
Speed rpm : 500	
Pressure hPa : 1200	
Rack travel mm : 13.60...13.80	
Measurement	Starting/full-load transition speed from holding magnet = 450 1/min.
Speed 1/min : 500	
1st pressure hPa : -	Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1
Rack travel in m: 12.10...12.30	
2nd pressure hPa : 725	
Rack travel in m: 12.50...12.60	
3rd pressure hPa : 815	
Rack travel in m: 12.90...13.30	
FUEL DELIVERY CHARACTERISTICS	
1st version	
Aneroid pressure h: 1200	
Speed rpm : 600	
Del.quantity cm ³ / : 197.5...202.5	
1000 s: (195.0...205.0)	
Aneroid pressure h: -	
Speed rpm : 800	

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 740
 Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV425...1050P2A548
 Governer no. : 0 421 833 351

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 185.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 15.1...15.3

100 s: (14.9...15.5)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 151.0...153.0

1000 : (149.0...155.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.80
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1160...1170
3rd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.4

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 425
Rack travel in mm : 4.80...5.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.80...11.90
2nd speed rpm : 600
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.90...12.10
2nd pressure hPa : 740
Rack travel in m: 12.30...12.40
3rd pressure hPa : 815
Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 156.0...160.0
1000 s: (154.0...162.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:
: JOHN DEERE # RE47353

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 2
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 076 742

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1050P2A534-
 7
 Governer no. : 0 421 833 356

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HZ030

1st version kW : 193.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm³/

100 s: (15.5...16.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/

100 s: (3.6...4.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 157.5...159.5

1000 : (155.5...161.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:
 1st rack travel in: 11.30
 Speed rpm : 1095...1105
 2nd rack travel in: 4.00
 Speed rpm : 1155...1165
 3rd rack travel in: 4.00
 Speed rpm : 1150...1180
 4th rack travel in: 1300
 Speed rpm : 0.30...1.40

LOW IDLE 1
 Control lever
 position degrees: 16...24
 Setting point w/out bumper spring
 Speed rpm : 400
 Rack travel in mm : 6.3

Testing:
 Speed rpm : 100
 Minimum rack trave: 19.00
 Speed rpm : 400
 Rack travel in mm : 6.70...6.90

TORQUE CONTROL
 Torque control curve - 1st version
 1st speed rpm : 1050
 Rack travel in m: 12.30...12.40
 2nd speed rpm : 700
 Rack travel in m: 13.70...13.90

Aneroid/Altitude Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 900
 Rack travel mm : 13.70...13.90

Measurement
 Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 10.70...10.90
 2nd pressure hPa : 390
 Rack travel in m: 11.40...11.50
 3rd pressure hPa : 605
 Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 900
 Speed rpm : 700
 Del.quantity cm3/ : 192.0...196.0
 1000 s: (190.0...198.0)
 Aneroid pressure h: -
 Speed rpm : 800

Del.quantity cm3/ : 116.5...120.5
 1000 s: (114.5...122.5)

BREAKAWAY
 1st version
 1mm rack travel less than
 full load rack tr: 11.30
 Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 90.0...110.0
 1000 s: (85.0...115.0)
 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
 Rack travel in mm : 6.70...6.90
 Del.quantity cm3/ : 39.0...43.0
 1000 s: (36.5...45.5)
 Spread cm3 : 8.00
 1000 s: (12.00)

Remarks: : JOHN DEERE # RE47549

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 3
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 076 743

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV/425...1100P2A534-
 8
 Governer no. : 0 421 833 370

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 AN 030

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del.quantity cm³/

100 s: (15.3...15.9)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/

100 s: (2.3...3.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 155.0...157.0

1000 : (153.0...159.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:
1st rack travel in: 11.20
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 650
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 895
Rack travel in m: 12.70...12.80
3rd pressure hPa : 720
Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ 1000 s: 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ 1000 s: 118.0...122.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ 1000 s: 25.5...29.5
1000 s: (23.0...32.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks: : JOHN DEERE # RE47394

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 24.07.92
 Replaces : 04.92
 Test oil : ISO-4113

Combination no. : 0 402 076 745

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV625...1100P2A534-
 9
 Governer no. : 0 421 833 372

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HZ 031

1st version kW : 205.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/

100 s: (17.2...17.8)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 625.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/

100 s: (2.5...3.3)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 174.5...176.5

1000 : (172.5...178.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:
1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 625
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 625
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.30...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 645
Rack travel in m: 12.10...12.20
3rd pressure hPa : 840
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 143.0...147.0
1000 s: (141.0...149.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 27.0...31.0
1000 s: (25.0...33.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks: : JOHN DEERE # RE47399

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 076 747

Injection pump
 Pump designation : PES6P110A720RS3224-1
 EP type number : 0 412 016 739
 Governor
 Governor design. : RSV475...1100P2A534-
 11
 Governor no. : 0 421 833 377

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6101 AT 001

1st version kW : 170.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 16.2...16.4

100 s: (16.0...16.6)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 475.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Del.quantity : 162.0...164.0

1000 : (160.0...166.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:
 1st rack travel in: 12.30
 Speed rpm : 1145...1155
 2nd rack travel in: 4.00
 Speed rpm : 1200...1210
 3rd rack travel in: 4.00
 Speed rpm : 1195...1225
 4th rack travel in: 1350
 Speed rpm : 0.30...1.40

LOW IDLE 1
 Control lever
 position degrees: 13...21
 Setting point w/out bumper spring
 Speed rpm : 475
 Rack travel in mm : 4.8

Testing:
 Speed rpm : 100
 Minimum rack trave: 19.00
 Speed rpm : 475
 Rack travel in mm : 5.20...5.40

TORQUE CONTROL
 Torque control curve - 1st version
 1st speed rpm : 1100
 Rack travel in m: 13.30...13.40
 2nd speed rpm : 600
 Rack travel in m: 13.80...14.00

Aneroid/Altitude Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 600
 Rack travel mm : 13.80...14.00

Measurement
 Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 11.60...11.80
 2nd pressure hPa : 265
 Rack travel in m: 13.30...13.40
 3rd pressure hPa : 135
 Rack travel in m: 12.10...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 300
 Speed rpm : 600
 Del.quantity cm³/ : 177.0...181.0
 1000 s: (175.0...183.0)
 Aneroid pressure h: -
 Speed rpm : 500

Del.quantity cm³/ : 130.5...134.5
 1000 s: (128.5...136.5)

BREAKAWAY
 1st version
 1mm rack travel less than
 full load rack tr: 12.30
 Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/ : 125.0...145.0
 1000 s: (120.0...150.0)
 Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 475
 Rack travel in mm : 5.20...5.40
 Del.quantity cm³/ : 10.0...14.0
 1000 s: (7.5...16.5)
 Spread cm³ : 6.00
 1000 s: (8.00)

Remarks: : JOHN DEERE # RE51966
 Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 21.08.92
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 076 748

Injection pump
 Pump designation : PES6P110A720RS3305
 EP type number : 0 412 016 740
 Governor
 Governor design. : RSV300...1100P1A555
 Governor no. : 0 421 833 379

Customer-spec. information
 Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.30...15.40

Del.quantity cm³/ : 18.3...18.5

100 s: (18.0...18.7)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.3...7.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del.quantity : 183.0...185.0

1000 : (180.5...187.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 14.30

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110
3rd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.9
Speed rpm : 400
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.30...15.40
2nd speed rpm : 500
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 15.30...15.40

Measurement
Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 13.40...13.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 640
Rack travel in m: 14.90...15.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.30

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (141.0...169.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 e
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 630 804

Injection pump
 Pump designation : PE12P120A120RS7193
 EP type number : 0 412 620 820
 Governor
 Governor design. : RQV275...1000PA938
 Governor no. : 0 421 813 822

Customer-spec. information
 Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.7...6.1

Del.quantity cm³/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 0.60...1.00

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 700

travel mm : 5.00...5.40

4th speed rpm : 1000

travel mm : 7.60...7.80

5th speed rpm : 1300

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 379.0...381.0
1000 : (376.0...384.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 275
Rack travel in mm : 5.80...6.00

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : —
Rack travel in m: 12.00...12.10
2nd pressure hPa : 350
Rack travel in m: 13.10...13.20
3rd pressure hPa : 250
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: —
Speed rpm : 500

Del.quantity cm³/ : 324.0...330.0
1000 s: (321.0...333.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.70...6.10
Del.quantity cm³/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 630 808

Injection pump
 Pump designation : PE12P120A120RS7254
 EP type number : 0 412 620 832
 Governor
 Governor design. : RQV275...1000PA938
 Governor no. : 0 421 813 822

Customer-spec. information
 Customer : BAUDOUIN

Engine : V12 BTI

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.7...6.1

Del.quantity cm³/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 0.60...1.00

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 700

travel mm : 5.00...5.40

4th speed rpm : 1000

travel mm : 7.60...7.80

5th speed rpm : 1300

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 379.0...381.0
1000 : (376.0...384.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 275
Rack travel in mm : 5.80...6.00

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 350
Rack travel in m: 13.10...13.20
3rd pressure hPa : 250
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 324.0...330.0
1000 s: (321.0...333.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.70...6.10
Del.quantity cm³/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 630 809

Injection pump
 Pump designation : PE12P120A120RS7253
 EP type number : 0 412 620 831
 Governor
 Governor design. : RQV400...750PA935
 Governor no. : 0 421 813 819

Customer-spec. information
 Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.0...4.4

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 419.0...421.0

1000 : (416.0...424.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: ?

Testing:

1st rack travel in: 13.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 781...794

4th rack travel in: 900

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 66...74

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 400
Rack travel in mm : 4.10...4.30

START CUT-OUT

Speed 1/min : 340 (360)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 750...755

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 640 837

Injection pump
 Pump designation : PE12P120A320LS7855
 EP type number : 0 412 620 835
 Governor
 Governor design. : RG400/106SPA1024
 Governor no. : 0 421 801 634

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0
 Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1065

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DEL.IV. AT FULL LOAD STOP

1st version

Speed rpm : 1065

Aneroid pressure h: 1000

Del.quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 1110...1125
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 300
Minimum rack trave: 6.90
Speed rpm : 400
Rack travel in mm : 4.80...5.40
Rack travel in mm : 2.00
Speed rpm : 460...500

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.80...11.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.50...11.70
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 640 838

Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RQV300...1150PA1039-
 1K
 Governer no. : 0 421 815 315

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 Phasing : 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 30.4...30.6

100 s: (30.1...30.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm : 9.2...9.4

Del.quantity cm³/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm³ : 0.8

100 s: (1.2)

3rd speed rpm : 300

Rack travel in mm : 7.30...7.50

Del.quantity cm³/ : 5.2...5.6 *

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 2.00...2.20

2nd speed rpm : 450

travel mm : 4.00...4.40

3rd speed rpm : 800

travel mm : 6.70...7.10

4th speed rpm : 1200

travel mm : 10.30...10.50

5th speed rpm : 1400

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1280

Rack travel in mm : 10.80...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1300

Del.quantity : 304.0...306.0

1000 : (301.0...309.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.80

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1310...1340

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Testing:

Speed rpm : 200

Minimum rack trave: 6.70

Speed rpm : 300

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 270...390

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 13.80...13.90

2nd speed rpm : 400

Rack travel in m: 12.00...12.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1150

Pressure hPa : 1300

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 1150

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 200

Rack travel in m: 9.60...9.70

3rd pressure hPa : 800

Rack travel in m: 12.50...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 149.0...151.0

1000 s: (146.0...154.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 100.0...120.0 *

1000 s: (-)

Speed rpm : 100

Del.quantity cm³/ : - **

1000 s: (-)

Rack travel in mm : 18.2...21.0

HIGH IDLE

1st version

Speed rpm : 500

Rack travel in mm : 0.00...7.00

Del.quantity cm³/ : - **

1000 s: (-)

2nd version

Speed rpm : 500

Rack travel in mm : 0.00...7.50

Del.quantity cm³/ : 0.0...50.0

1000 s: (-)

3rd version

Speed rpm : 500

Rack travel in mm : 8.50...8.70

Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:
: MAN-NR. 3-7226

* applies to cylinders 4, 5, 6, 8 ,10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 12
start of delivery

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 640 839

Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RQV300...1150PA1039K
 Governer no. : 0 421 815 314

Customer-spec. information
 Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 Phasing : 345
 Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.70...14.80

Del.quantity cm³/ : 33.4...33.6

100 s: (33.1...33.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.2...9.4
 Del.quantity cm³/ : 14.9...15.1
 100 s: (14.6...15.4)
 Spread cm³ : 0.8
 100 s: (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 5.2...5.6 *
 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 2.00...2.20
2nd speed	rpm	: 450
	travel mm	: 4.00...4.40
3rd speed	rpm	: 800
	travel mm	: 6.70...7.10
4th speed	rpm	: 1200
	travel mm	: 10.30...10.50
5th speed	rpm	: 1400
	travel mm	: 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position	Degree:	-1
Speed	rpm	: 1265
Rack travel in mm : 11.70...15.70		

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 334.0...336.0
1000 : (331.0...339.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:

Speed rpm : 200
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 270...390

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.70...14.80
2nd speed rpm : 400
Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1150
Pressure hPa : 1300
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 1150

1st pressure hPa : -

Rack travel in m: 9.20...9.40
2nd pressure hPa : 200
Rack travel in m: 9.60...9.70
3rd pressure hPa : 800
Rack travel in m: 12.50...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 18.2...21.0

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : 0.00...7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 0.00...7.50
Del.quantity cm³/ : 0.0...50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.50...8.70

Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:
: MAN-NR. 3-7227

* applies to cylinders 4, 5, 6, 8 ,10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 12
start of delivery

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 640 840

Injection pump
 Pump designation : PE12P120A320LS7806
 EP type number : 0 412 620 805
 Governor
 Governor design. : RQV350...1000PA835-3
 Governor no. : 0 421 814 018

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 419.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 12-1-5-9-8-3-
 4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.50

Del.quantity cm³/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.10
 2nd speed rpm : 700
 travel mm : 4.90...5.30
 3rd speed rpm : 1050
 travel mm : 8.00...8.40
 4th speed rpm : 1110
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 650
 Del.quantity : 187.0...189.0
 1000 : (184.0...192.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 117...125

Testing:
 1st rack travel in: 11.70
 Speed rpm : 1045...1060
 2nd rack travel in: 4.00
 Speed rpm : 1100...1130
 4th rack travel in: 1300
 Speed rpm : 0.00...1.00

LOW IDLE 1
 Control lever
 position degrees: 64...72

Testing:
 Speed rpm : 250
 Minimum rack trave: 7.60
 Speed rpm : 350
 Rack travel in mm : 6.00...6.20

CONSTANT REGULATION
 Speed rpm : 400...600

TORQUE CONTROL
 Dimension a mm : 0.60
 2nd speed rpm : 1000
 Rack travel in m: 12.70...12.90
 3rd speed rpm : 915
 Rack travel in m: 13.00...13.20
 4th speed rpm : 800
 Rack travel in m: 13.30...13.50

Aneroid/Altitude
 Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 650
 Rack travel mm : 13.30...13.50

Measurement
 Speed 1/min : 500

1st pressure hPa : 300
 Rack travel in m: 11.50...11.70
 2nd pressure hPa : 420

Rack travel in m: 12.60...12.80
 3rd pressure hPa : -
 Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 1200
 Speed rpm : 1000
 Del.quantity cm³/s : 182.0...186.0
 1000 s: (179.0...189.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1200
 Speed rpm : 800
 Del.quantity cm³/s : 196.0...200.0
 1000 s: (193.0...203.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm³/s : 125.0...129.0
 1000 s: (122.0...132.0)
 Spread cm³ : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 11.70
 Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/s : 170.0...190.0
 1000 s: (166.0...194.0)

Remarks:
 :

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 640 841

Injection pump
 Pump designation : PE12P120A320LS7855
 EP type number : 0 412 620 835
 Governor
 Governor design. : RQ400/1065PA1024
 Governor no. : 0 421 801 634

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0
 Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1065

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.60...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1065

Aneroid pressure h: 1000

Del.quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 15.9

Testing:

1st rack travel in: 12.90
Speed rpm : 1110...1125
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 300
Minimum rack trave: 7.20
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 465...505

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.80...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.50...11.70
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 646 798

Injection pump
 Pump designation : PE6P120A320LS7854
 EP type number : 0 412 626 872
 Governor
 Governor design. : RQV350...950PA870-17
 Governor no. : 0 421 814 005

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.90...15.10

Del.quantity cm³/ : 25.1...25.3

100 s: (24.8...25.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.7

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 350
	travel mm	: 1.30...1.80
2nd speed	rpm	: 570
	travel mm	: 3.90...4.40
3rd speed	rpm	: 850
	travel mm	: 5.70...6.20
4th speed	rpm	: 1008
	travel mm	: 7.40...7.90
5th speed	rpm	: 1110
	travel mm	: 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 251.0...253.0
1000 : (248.0...256.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 250
Minimum rack trave: 7.70
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 430...480

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 350
Rack travel in m: 11.70...12.10
3rd pressure hPa : 600
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 245.0...248.0
1000 s: (242.0...251.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

APPLICATION

Pistenbully

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 646 799

Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/950PA1031-5
 Governor no. : 0 421 801 657

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.20...11.30
2nd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 2
 Edition : 27.08.92
 Replaces : 27.05.91
 Test oil : ISO-4113

Combination no. : 0 402 646 843

Injection pump
 Pump designation : PE6P120A320LS7808
 EP type number : 0 412 626 816
 Governor
 Governor design. : RQV300...1050PA797-2
 Governor no. : 0 421 813 614

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 240.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.20...1.40
2nd speed	rpm	: 600
	travel mm	: 4.90...5.10
3rd speed	rpm	: 1075
	travel mm	: 7.40...7.60
4th speed	rpm	: 1100
	travel mm	: 8.00...8.40
5th speed	rpm	: 1150
	travel mm	: 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 121...129

Testing:
1st rack travel in: 13.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 5.60...6.20

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.80...15.00
3rd speed rpm : 800
Rack travel in m: 15.00...15.20
4th speed rpm : 700

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 550
Rack travel in m: 12.90...13.10

3rd pressure hPa : 1050
Rack travel in m: 14.00...14.10 *
4th pressure hPa : 1150
Rack travel in m: 14.40...14.60
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1450
Speed rpm : 1050
Del.quantity cm³/ s: 231.0...234.0
1000 s: (228.0...237.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1450
Speed rpm : 800
Del.quantity cm³/ s: 237.0...241.0
1000 s: (234.0...244.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ s: 142.0...144.0
1000 s: (139.0...147.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ s: 200.0...220.0
1000 s: (196.0...224.0)

Remarks:
:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 16,0 c
 Edition : 24.07.92
 Replaces : 02.90
 Test oil : ISO-4113

Combination no. : 0 402 646 883

Injection pump
 Pump designation : PE6P130A720RS7122-2
 EP type number : 0 412 636 813
 Governor
 Governor design. : RQV225...930PA922
 Governer no. : 0 421 813 763

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD162 FL,

1st version kW : 357.0
 Rated speed : 1060

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 28.8...29.1

100 s: (28.5...29.5)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm³ : 0.5

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 250
	travel mm	: 1.00...1.40
2nd speed	rpm	: 350
	travel mm	: 2.10...2.70
3rd speed	rpm	: 700
	travel mm	: 5.60...6.20
4th speed	rpm	: 975
	travel mm	: 8.20...8.40
5th speed	rpm	: 1090
	travel mm	: 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.70...10.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 288.5...291.5
1000 : (285.0...295.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.30
Speed rpm : 970...980
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 225...450

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 80
Rack travel in m: 9.90...10.00
3rd pressure hPa : 610
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 182.5...185.5
1000 s: (179.0...189.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 970...980

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (121.0...149.0)
Rack travel in mm : 9.70...9.90

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 25.5...30.5
1000 s: (23.0...33.0)
Spread cm³ : 5.00
1000 s: (8.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 898

Injection pump
 Pump designation : PE6P120A720RS7020
 EP type number : 0 412 626 828
 Governor
 Governor design. : RQ200/1000PA713-9
 Governor no. : 0 421 801 516

Customer-spec. information
 Customer : SCANIA

Engine : DS11 74

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm³ : 0.5

100 s: (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.0

Del.quantity cm³/ : 1.8...2.2

100 s: (-)

Spread cm³ : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 159.0...161.0

1000 : (156.0...164.0)

Spread cm³ : 5.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack trave: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 305...345

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.90...11.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.60
2nd pressure hPa : 150
Rack travel in m: 9.90...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/ : 157.0...165.0
1000 s: (155.0...167.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 116.0...120.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100

CO2

Rack travel in mm : 9.20...9.60

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : 06.92
 Test cil : ISO-4113

Combination no. : 0 402 646 915

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA972
 Governer no. : 0 421 801 542

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY
1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 10.10...10.40

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 646 916

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...1050PA797
 -17
 Governer no. : 0 421 813 884

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 1.00...1.50
2nd speed	rpm	: 637
travel mm		: 4.90...5.40
3rd speed	rpm	: 830
travel mm		: 6.00...6.50
4th speed	rpm	: 1107
travel mm		: 8.30...8.80
5th speed	rpm	: 1218
travel mm		: 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/s : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/s : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/s : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/s : 200.0...220.0
1000 s: (196.0...224.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 06.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 917X
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/950PA971
 Governor no. : 0 421 801 543
 Cust. part no. : 0180740402
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA
 1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm³/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : 04.92
 Test oil : ISO-4113

Combination no. : D 402 646 921

Injection pump
 Pump designation : PE6P120A320LS7837-10
 EP type number : 0 412 626 855
 Governor
 Governor design. : RQ300/1050PA972-3
 Governor no. : D 421 801 565

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.80...10.00
2nd pressure hPa : 600
Rack travel in m: 13.70...13.90
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1400
Rack travel in m: 15.20...15.40
5th pressure hPa : -
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 1050

Del.quantity cm³/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm³/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 60.0...90.0
1000 s: (56.0...94.0)
Rack travel in mm : 8.90...9.20

Remarks:
:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 646 922

Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA972-2
 Governor no. : 0 421 801 556

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.60...10.70
2nd pressure hPa : 550
Rack travel in m: 13.10...13.50
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00
4th pressure hPa : 1250
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm³ : 8.00
1000 s: (12.0)
Speed rpm : 500
Del.quantity cm³/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm³ : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1105

Remarks:
:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 924

Injection pump
 Pump designation : PE6P120A320LS7837-10
 EP type number : 0 412 626 855
 Governor
 Governor design. : RQ300/950PA971-3
 Governor no. : 0 421 801 557

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
 1st rack travel in: 14.50
 Speed rpm : 990...1005
 2nd rack travel in: 4.00
 Speed rpm : 1080...1110
 4th rack travel in: 1200
 Speed rpm : 0.00...1.50

LOW IDLE 1
 Setting point w/out bumper spring
 Speed rpm : 300
 Rack travel in mm : 6.6

Testing:
 Speed rpm : 200
 Minimum rack trave: 8.20
 Speed rpm : 300
 Rack travel in mm : 6.30...6.90
 Rack travel in mm : 2.00
 Speed rpm : 380...420

TORQUE CONTROL
 Dimension a mm : 0.40
 2nd speed rpm : 950
 Rack travel in m: 15.50...15.70
 3rd speed rpm : 800
 Rack travel in m: 15.60...15.80

Aneroid/Altitude
 Compensator Test

1st version
 Setting
 Speed rpm : 600
 Pressure hPa : 1000
 Rack travel mm : 14.70...14.90

Measurement
 Speed 1/min : 600

1st pressure hPa : 200
 Rack travel in m: 9.70...9.90
 2nd pressure hPa : 600
 Rack travel in m: 13.50...13.70
 3rd pressure hPa : 1250
 Rack travel in m: 14.80...15.00 *
 4th pressure hPa : 1450
 Rack travel in m: 15.40...15.60
 5th pressure hPa : -
 Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 1800
 Speed rpm : 950

Del.quantity cm³/ : 251.0...254.0
 1000 s: (248.0...257.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1800
 Speed rpm : 800
 Del.quantity cm³/ : 250.0...254.0
 1000 s: (247.0...257.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm³/ : 135.0...137.0
 1000 s: (132.0...140.0)
 Spread cm³ : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
 1mm rack travel less than

full load rack tr: 14.50
 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/ : 65.0...95.0
 1000 s: (61.0...99.0)
 Rack travel in mm : 9.30...9.50

Remarks:

* Increase in control-rod travel with
 respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 925

Injection pump
 Pump designation : PE6P120A320LS7837-10
 EP type number : 0 412 626 855
 Governor
 Governor design. : RQV300...950PA797-20
 Governor no. : 0 421 813 893

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 Q25

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 567
 travel mm : 4.40...4.90

3rd speed rpm : 780
 travel mm : 6.10...6.60

4th speed rpm : 1009
 travel mm : 8.30...8.80

5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure hPa : 1000
 Del.quantity : 233.0...235.0
 1000 : (230.0...238.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 120...128

Testing:
 1st rack travel in: 14.50
 Speed rpm : 990...1000
 2nd rack travel in: 4.00
 Speed rpm : 1085...1115
 4th rack travel in: 1200
 Speed rpm : 0.00...1.00

LOW IDLE 1
 Control lever
 position degrees: 82...90

Testing:
 Speed rpm : 200
 Minimum rack trave: 7.70
 Speed rpm : 300
 Rack travel in mm : 5.60...6.20

CONSTANT REGULATION
 Speed rpm : 300...450

TORQUE CONTROL
 Dimension a mm : 0.10
 2nd speed rpm : 950
 Rack travel in m: 15.50...15.70
 3rd speed rpm : 800
 Rack travel in m: 15.60...15.80

Aneroid/Altitude Compensator Test

1st version
 Setting
 Speed rpm : 600
 Pressure hPa : 1000
 Rack travel mm : 14.70...14.90

Measurement
 Speed 1/min : 600

1st pressure hPa : 200
 Rack travel in m: 9.70...9.90
 2nd pressure hPa : 600
 Rack travel in m: 13.50...13.70
 3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00
 4th pressure hPa : 1450
 Rack travel in m: 15.40...15.60
 5th pressure hPa : -
 Rack travel in m: 9.30...9.50

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure hPa : 1700
 Speed rpm : 950
 Del.quantity cm³/s : 251.0...254.0
 1000 s: (248.0...257.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure hPa : 1700
 Speed rpm : 800
 Del.quantity cm³/s : 250.0...254.0
 1000 s: (247.0...257.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure hPa : -
 Speed rpm : 500
 Del.quantity cm³/s : 135.0...137.0
 1000 s: (132.0...140.0)
 Spread cm³ : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 14.50
 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/s : 250.0...270.0
 1000 s: (246.0...274.0)

Remarks:
 :

* Increase in control-rod travel with
 respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 06.92
 Test oil : ISO-4113

 Combination no. : 0 402 646 926X

 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQV300...950PA797-19
 Governor no. : 0 421 813 901

 Cust. part no. : 0180740502

 Customer-spec. information
 Customer : MERCEDES-BENZ

 Engine : OM401 LA

 1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Overflow quantity min. 1/h: 100...120

 Test nozzle holder assembly : 1 688 901 105

 Opening pressure, bar : 207...210

 Orifice plate diameter mm : 0,8

 Test lines : 1 680 750 075

 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values —

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

 Tolerance + - ° : 0.50 (0.75)

 Time to cyl. no. : 6

BASIC SETTING

1st speed	rpm	: 550
<hr/>		
Rack travel in mm		: 15.20...15.40
<hr/>		
Del.quantity cm ³ /		: 24.0...24.2
<hr/>		
100 s:		(23.7...24.5)
<hr/>		
Spread	cm ³	: 0.6
<hr/>		
100 s:		(0.9)
<hr/>		
2nd speed	rpm	: 300.0
Rack travel in mm		: 6.3...6.9
Del.quantity cm ³ /		: 1.6...2.2
100 s:		(1.3...2.5)
Spread	cm ³	: 0.6
100 s:		(1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 617
 travel mm : 5.00...5.50
 3rd speed rpm : 780
 travel mm : 6.10...6.60
 4th speed rpm : 1009
 travel mm : 8.30...8.80
 5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1

Speed rpm : 1020
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 240.0...242.0
1000 : (237.0...245.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 06.92
 Test oil : ISO-4113

 Combination no. : 0 402 646 929X

 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQV300...1050PA797
 -25
 Governer no. : 0 421 813 924

 Cust. part no. : 0200744102

 Customer-spec. information
 Customer : MERCEDES-BENZ

 Engine : OM401 LA

 1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Overflow
 quantity min. 1/h: 100...120

 Test nozzle holder
 assembly : 1 688 901 105

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,8

 Test lines : 1 680 750 075

 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

 Tolerance + - ° : 0.50 (0.75)

 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

 Rack travel in mm : 15.20...15.40

 Del.quantity cm³/ : 24.0...24.2
 100 s: (23.7...24.5)

 Spread cm³ : 0.6
 100 s: (0.9)

 2nd speed rpm : 300.0
 Rack travel in mm : 6.3...6.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 1.00...1.50
2nd speed	rpm	: 608
travel mm		: 4.80...5.30
3rd speed	rpm	: 820
travel mm		: 5.90...6.40
4th speed	rpm	: 1108
travel mm		: 8.30...8.80
5th speed	rpm	: 1183
travel mm		: 9.80...10.30

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1

Speed rpm : 1130
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 240.0...242.0
1000 : (237.0...245.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 87...92

Testing:

Speed rpm : 200
Minimum rack trave: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 930X
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA972-7
 Governer no. : 0 421 801 583
 Cust. part no. : 0200744002
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA
 1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed	rpm	: 550
<hr/>		
Rack travel in mm	: 15.20...15.40	
<hr/>		
Del.quantity cm ³ /	: 24.0...24.2	
<hr/>		
100 s:	(23.7...24.5)	
<hr/>		
Spread	cm ³	: 0.6
<hr/>		
100 s: (0.9)		
<hr/>		
2nd speed	rpm	: 300.0
Rack travel in mm	: 6.3...6.9	
Del.quantity cm ³ /	: 1.6...2.2	
<hr/>		
100 s:	(1.3...2.5)	
Spread	cm ³	: 0.6
<hr/>		
100 s:	(1.0)	

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 1200
 Del.quantity : 240.0...242.0
 1000 : (237.0...245.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack trave: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.70...10.80
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 931

Injection pump
 Pump designation : PE6P120A320LS7837-10
 EP type number : D 412 626 855
 Governor
 Governor design. : RQV300...1050PA797
 -24
 Governer no. : 0 421 813 911

Customer-spec. information
 Customer : MERCEDES-BENZ

* Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 608

travel mm : 4.80...5.30

3rd speed rpm : 820

travel mm : 5.90...6.40

4th speed rpm : 1108

travel mm : 8.30...8.80

5th speed rpm : 1280

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000
 Del.quantity : 234.0...236.0
 1000 : (231.0...239.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 118...126

Testing:
 1st rack travel in: 13.90
 Speed rpm : 1090...1105
 2nd rack travel in: 4.00
 Speed rpm : 1165...1195
 4th rack travel in: 1300
 Speed rpm : 0.00...1.00

LOW IDLE 1
 Control lever
 position degrees: 81...89

Testing:
 Speed rpm : 200
 Minimum rack trave: 7.70
 Speed rpm : 300
 Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
 Speed rpm : 300...550

TORQUE CONTROL
 Dimension a mm : 0.60
 2nd speed rpm : 1050
 Rack travel in m: 14.90...15.10
 3rd speed rpm : 800
 Rack travel in m: 15.50...15.70

Aneroid/Altitude
 Compensator Test

1st version
 Setting
 Speed rpm : 600
 Pressure hPa : 1000
 Rack travel mm : 14.70...14.90

Measurement
 Speed 1/min : 600

1st pressure hPa : 200
 Rack travel in m: 9.80...10.00
 2nd pressure hPa : 600
 Rack travel in m: 13.70...13.90

3rd pressure hPa : 1250
 Rack travel in m: 14.80...15.00 *
 4th pressure hPa : 1400
 Rack travel in m: 15.30...15.50
 5th pressure hPa : -
 Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 1800
 Speed rpm : 1050
 Del.quantity cm³/ : 235.0...238.0
 1000 s: (232.0...241.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1800
 Speed rpm : 800
 Del.quantity cm³/ : 248.0...252.0
 1000 s: (245.0...255.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm³/ : 132.0...134.0
 1000 s: (129.0...137.0)
 Spread cm³ : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 13.90
 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/ : 220.0...240.0
 1000 s: (216.0...244.0)

Remarks:
 :

* Increase in control-rod travel with
 respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 n
 Edition : 31.08.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 646 936

Injection pump
 Pump designation : PE6P120A320RS7230
 EP type number : 0 412 626 843
 Governor
 Governor design. : RQV250...1000PA990K
 Governor no. : 0 421 815 274

Customer-spec. information
 Customer : DAF

Engine : WS 315 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 13.80...14.80

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 26.4...26.6

100 s: (26.1...26.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 685

travel mm : 6.20...6.60

4th speed rpm : 1030

travel mm : 9.60...10.00

5th speed rpm : 1145

travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 12.90...15.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 264.0...266.0

1000 : (261.0...269.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.20
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: ?

Testing:
Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 13.40...13.60
4th speed rpm : 825
Rack travel in m: 13.80...14.00
5th speed rpm : 980
Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 630
Rack travel in m: 11.80...11.90

3rd pressure hPa : 340
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 500
Del.quantity cm³/s : 288.0...292.0
1000 s: (285.0...295.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/s : 162.0...164.0
1000 s: (159.0...167.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:
:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 942

Injection pump
 Pump designation : PE6P120A320LS7837-10
 EP type number : 0 412 626 855
 Governor
 Governor design. : RQ300/1050PA993
 Governor no. : 0 421 801 581

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
 1st rack travel in: 14.00
 Speed rpm : 1090...1105
 2nd rack travel in: 4.00
 Speed rpm : 1170...1200
 4th rack travel in: 1300
 Speed rpm : 0.00...1.50

LOW IDLE 1
 Setting point w/out bumper spring
 Speed rpm : 300
 Rack travel in mm : 5.9

Testing:
 Speed rpm : 200
 Minimum rack trave: 8.10
 Speed rpm : 300
 Rack travel in mm : 5.80...6.00
 Rack travel in mm : 2.00
 Speed rpm : 380...420

TORQUE CONTROL
 Dimension a mm : ?
 2nd speed rpm : 1050
 Rack travel in m: 15.00...15.20
 3rd speed rpm : 800
 Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version
 Setting
 Speed rpm : 600
 Pressure hPa : 1000
 Rack travel mm : 14.70...14.90

Measurement
 Speed 1/min : 600
 1st pressure hPa : 200
 Rack travel in m: 9.80...10.00
 2nd pressure hPa : 600
 Rack travel in m: 13.70...13.90
 3rd pressure hPa : 1250
 Rack travel in m: 14.80...15.00 *
 4th pressure hPa : 1400
 Rack travel in m: 15.20...15.40
 5th pressure hPa : -
 Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 1800
 Speed rpm : 1050
 Del.quantity cm3/ : 235.0...238.0
 1000 s: (232.0...241.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1800
 Speed rpm : 800
 Del.quantity cm3/ : 248.0...252.0
 1000 s: (245.0...255.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 132.0...134.0
 1000 s: (129.0...137.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 14.00
 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 220.0...240.0
 1000 s: (216.0...244.0)

Remarks:
 :
 * Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 6
 Edition : 21.08.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 646 952

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA972-8
 Governor no. : 0 421 801 626

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del.quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement

Speed 1/min : 600

1st pressure hPa : 180
Rack travel in m: 10.40...10.60
2nd pressure hPa : 280
Rack travel in m: 11.30...11.60
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *

4th pressure hPa : -
Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 182.0...185.0
1000 s: (179.0...188.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...80.0
1000 s: (46.0...84.0)
Rack travel in mm : 10.30...10.70

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 954

Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA993-5
 Governor no. : 0 421 801 610

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.60...10.70
2nd pressure hPa : 550
Rack travel in m: 13.10...13.30
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00 *
4th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500

Speed rpm : 1050
Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:
:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 959

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA993-6
 Governor no. : 0 421 801 616

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Timing + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.20
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 04.92
 Test oil : ISO-4113

Combination no. : 0 402 646 976

Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/1050PA1031
 Governer no. : 0 421 801 642

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:
Speed rpm : 200
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL
Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1105

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 977

Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/1050PA1030-1
 Governor no. : 0 421 801 641

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL
Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement
Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.80...11.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 04.92
 Test oil : ISO-4113

Combination no. : 0 402 646 978

Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/950PA1031-1
 Governer no. : 0 421 801 643

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/ : 22.9...23.1
 100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.5
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Aneroid pressure h: 1000
 Del.quantity : 229.0...231.0
 1000 : (226.0...234.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:
Speed rpm : 200
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 390...430

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1005

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 979

Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/950PA1032
 Governor no. : 0 421 801 644

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.10...10.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 980

Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQV300...950PA1033
 Governer no. : 0 421 813 990

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.10...1.50
2nd speed	rpm	: 567
	travel mm	: 4.40...5.00
3rd speed	rpm	: 780
	travel mm	: 6.00...6.60
4th speed	rpm	: 1010
	travel mm	: 8.50...8.70
5th speed	rpm	: 1190
	travel mm	: 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1066

Rack travel in mm : 10.60...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1000

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 982

Injection pump
 Pump designation : PE6P120A320LS7848
 EP type number : 0 412 626 866
 Governor
 Governor design. : RQV300...1050PA1034
 Governor no. : 0 421 813 993

Customer-spec. information

Customer : LIEBHERR

Engine : D 9306 TI

1st version kW : 270.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.90...15.00

Del.quantity cm³/

100 s: (25.6...26.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.9

Del.quantity cm³/

100 s: (2.7...3.9)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10
 2nd speed rpm : 405
 travel mm : 2.40...2.90
 3rd speed rpm : 550
 travel mm : 4.20...4.60
 4th speed rpm : 780
 travel mm : 6.30...6.90
 5th speed rpm : 1118
 travel mm : 10.40...10.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
 Speed rpm : 1185
 Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
 Aneroid pressure h: 1500
 Del.quantity : 259.0...261.0
 1000 : (256.0...264.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:

1st rack travel in: 13.90
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 250
Minimum rack trave: 8.90
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 700
Pressure hPa : 1500
Rack travel mm : 14.90...15.00

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: ?
2nd pressure hPa : 950
Rack travel in m: 14.60...14.70
3rd pressure hPa : 750
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm³/ : 194.0...196.0
 1000 s: (191.0...199.0)
Spread cm³ : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
 1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 983

Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQV300...1050PA1033-
 2
 Governor no. : 0 421 813 994

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 0.60...1.00
2nd speed	rpm	: 575
	travel mm	: 4.20...4.80
3rd speed	rpm	: 830
	travel mm	: 5.80...6.40
4th speed	rpm	: 1107
	travel mm	: 8.30...8.50
5th speed	rpm	: 1290
	travel mm	: 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 850
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650

Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1100

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 993
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/1050PA1030-3
 Governor no. : 0 421 801 653
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM441 LA
 1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack trave: 8.30
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL
Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 13.80...14.00
3rd speed rpm : 800
Rack travel in m: 14.00...14.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.00...11.20
2nd pressure hPa : 580
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 223.0...227.0
1000 s: (220.0...230.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...90.0
1000 s: (56.0...94.0)
Rack travel in mm : 10.40...10.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 996

Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/1050PA1031-4
 Governor no. : 0 421 801 656

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 13.00
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.00...11.20
2nd pressure hPa : 580
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 223.0...227.0
1000 s: (220.0...230.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 997

Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQV300...950PA1033-5
 Governor no. : 0 421 814 008

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 1.00...1.50
2nd speed	rpm	: 575
travel mm		: 4.20...4.70
3rd speed	rpm	: 790
travel mm		: 5.90...6.40
4th speed	rpm	: 1010
travel mm		: 8.00...8.50
5th speed	rpm	: 1200
travel mm		: 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 410...470

CONSTANT REGULATION
Speed rpm : 290...360

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.20...11.30
2nd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ s: 230.0...234.0
1000 s: (227.0...237.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ s: 133.0...135.0
1000 s: (130.0...138.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1000

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 646 998

 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQV300...1050PA1033
 Governor no. : 0 421 814 009

 Customer-spec. information
 Customer : MERCEDES-BENZ

 Engine : OM441 LA

 1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Overflow
 quantity min. 1/h: 100...120

 Test nozzle holder assembly : 1 688 901 105

 Opening pressure, bar : 207...210

 Orifice plate diameter mm : 0,8

 Test lines : 1 680 750 075

 Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1-

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm³/

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 0.50...1.00
2nd speed	rpm	: 575
travel mm		: 4.30...4.80
3rd speed	rpm	: 625
travel mm		: 4.80...5.30
4th speed	rpm	: 830
travel mm		: 5.90...6.40
5th speed	rpm	: 1190
travel mm		: 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 13.00
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack trave: 8.70
Speed rpm : 300
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 575...625

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.00...11.20
2nd pressure hPa : 580
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 223.0...227.0
1000 s: (220.0...230.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 817T

Injection pump
 Pump designation : PE8P120A320LS7801-10
 EP type number : 0 412 628 851
 Governor
 Governor design. : RQ300/1050PA762-16
 Governer no. : 0 421 801 620

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 210.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8-7-2-6-3-5-
 4-1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 16.7...16.9
 100 s: (16.4...17.2)

Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.4
 Del.quantity cm³/ : 1.3...1.9
 100 s: (1.0...2.2)
 Spread cm³ : 0.5
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500
 Aneroid pressure h: 1050
 Del.quantity : 167.0...169.0
 1000 : (164.0...172.0)
 Spread cm³ : 4.00
 1000 : (7.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : 0.75
2nd speed rpm : 1050
3rd speed rpm : 500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.90...11.10

Measurement
Speed 1/min : 600
1st pressure hPa : 300
Rack travel in m: 11.80...12.00
2nd pressure hPa : 400
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 145.5...148.5
1000 s: (142.5...151.5)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

E02

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 893X
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/950PA971-2
 Governer no. : 0 421 801 548
 Cust. part no. : 0200740602
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM402 LA
 1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test Lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1200
 Del.quantity : 230.0...232.0
 1000 : (227.0...235.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950

Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 648 894X

 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...950PA797-18
 Governor no. : 0 421 813 886

 Cust. part no. : 0200740702

 Customer-spec. information
 Customer : MERCEDES-BENZ

 Engine : OM402 LA

 1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Overflow
 quantity min. 1/h: 100...120

 Test nozzle holder
 assembly : 1 688 901 105

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,8

 Test Lines : 1 680 750 075

 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.00...1.50
2nd speed	rpm	: 567
	travel mm	: 4.40...4.90
3rd speed	rpm	: 780
	travel mm	: 6.10...6.60
4th speed	rpm	: 1009
	travel mm	: 8.30...8.80
5th speed	rpm	: 1092
	travel mm	: 9.80...10.30

GUIDE SLEEVE POSITION
 Control-lever position

Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1200
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 122...130

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 250...360

TORQUE CONTROL
Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 648 895X

 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA972-1
 Governer no. : 0 421 801 545

 Cust. part no. : 0180742102

 Customer-spec. information
 Customer : MERCEDES-BENZ

 Engine : OM402 LA

 1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Overflow
 quantity min. 1/h: 100...120

 Test nozzle holder
 assembly : 1 688 901 105

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values —

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050

Del.quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 900

Injection pump
 Pump designation : PE8P120A320LS7840-10
 EP type number : 0 412 628 856
 Governor
 Governor design. : RQ300/1050PA972-4
 Governor no. : 0 421 801 560

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.50

Del.quantity cm³/ : 20.6...20.8
 100 s: (20.3...21.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
 Aneroid pressure h: 900
 Del.quantity : 206.0...208.0
 1000 : (203.0...211.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 12.90...13.10
3rd speed rpm : 800
Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.30...13.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.40...13.50
4th pressure hPa : 1250
Rack travel in m: 13.70...13.90
5th pressure hPa : -
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm³/ : 194.0...197.0
1000 s: (191.0...200.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800
Del.quantity cm³/ : 220.0...224.0
1000 s: (217.0...227.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1090...1105

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/1050PA972-5
 Governer no. : 0 421 801 564

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm³/ : 25.6...25.8
 100 s: (25.3...26.1)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1050
 Del.quantity : 256.0...258.0
 1000 : (253.0...261.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.00

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050

Del.quantity cm³/ : 271.0...274.0
1000 s: (268.0...277.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm³/ : 276.0...280.0

1000 s: (273.0...283.0)
Spread cm³ : 8.00

1000 s: (12.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 133.0...135.0

1000 s: (130.0...138.0)
Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.10...9.40

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 906

Injection pump
 Pump designation : PE8P120A320LS7838-10
 EP type number : 0 412 628 854
 Governor
 Governor design. : RQ300/1050PA972-6
 Governor no. : 0 421 801 569

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 320.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.50...14.70
3rd speed rpm : 800
Rack travel in m: 15.00...15.20

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 700
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.30...14.50
4th pressure hPa : 1350
Rack travel in m: 14.70...14.90
5th pressure hPa : -
Rack travel in m: 9.00...9.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600

Speed rpm : 1050
Del.quantity cm³/ s: 226.0...229.0
1000 s: (223.0...232.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ s: 239.0...243.0
1000 s: (236.0...246.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ s: 135.0...137.0
1000 s: (132.0...140.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 911

Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQV300...1050PA797
 -27
 Governor no. : 0 421 813 916

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 638 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.00...1.50
2nd speed	rpm	: 558
	travel mm	: 4.30...4.80
3rd speed	rpm	: 820
	travel mm	: 5.90...6.40
4th speed	rpm	: 1108
	travel mm	: 8.30...8.80
5th speed	rpm	: 1183
	travel mm	: 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1050
Del.quantity : 256.0...258.0
1000 : (253.0...261.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 200
Minimum rack trave: 5.30
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800

Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del.quantity cm³/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm³/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 914X
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...1050PA797
 -30
 Governor no. : 0 421 813 921
 Cust. part no. : 0180742202
 Customer-spec. information
 Customer : MB-NFZ
 Engine : OM402 A
 1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test Lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) **Injection pump setting values**
 Insp. values in parentheses
 Set equal delivery quant.
 per values

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) **Setting of injection pump
 with governor**

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 1.00...1.50
2nd speed	rpm	: 608
travel mm		: 4.80...5.30
3rd speed	rpm	: 820
travel mm		: 5.90...6.40
4th speed	rpm	: 1108
travel mm		: 8.10...8.60
5th speed	rpm	: 1190
travel mm		: 9.80...10.30

GUIDE SLEEVE POSITION
 Control-lever position

Degree: -1
Speed rpm : 1130
Rack travel in mm : 12.60...15.20
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed rpm : 750
Aneroid pressure h: 1200
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

**Aneroid/Altitude
Compensator Test**

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 915X
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA993-1
 Governor no. : 0 421 801 582
 Cust. part no. : 0200747202
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM402 LA
 1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test Lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring:
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.90...11.00
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,5 e1
 Edition : 21.08.92
 Replaces : 05.91
 Test oil : ISO-4113

Combination no. : 0 402 648 916

Injection pump
 Pump designation : PE8P120A520LS7818-1
 EP type number : 0 412 628 857
 Governor
 Governor design. : RQV250...1150PA902
 Governor no. : 0 421 813 720

Customer-spec. information
 Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 31.8...32.0

100 s: (31.5...32.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 8.9...9.1
 Del.quantity cm³/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm³ : 0.5

100 s: (0.9)

3rd speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 250
	travel mm	: 1.40...1.60
2nd speed	rpm	: 450
	travel mm	: 3.40...4.00
3rd speed	rpm	: 850
	travel mm	: 6.30...6.90
4th speed	rpm	: 1150
	travel mm	: 9.40...9.60
5th speed	rpm	: 1450
	travel mm	: 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
 Speed rpm : 1250
 Rack travel in mm : 11.70...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 318.0...320.0
1000 : (315.0...323.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 100
Minimum rack trave: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 100
Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : 0 **
1000 s: (-)

HIGH IDLE

1st version
Speed rpm : 500
Rack travel in mm : 0.00...7.00
Del.quantity cm³/ : 0 **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 0.00...7.50
Del.quantity cm³/ : < 50.0 **
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.10...8.30
Del.quantity cm³/ : 125.0...**
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7150

* applies to cylinders 2, 3, 4 and 8

** applies for cylinders 1, 5, 6, and 7

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RG300/1050PA993-3
 Governor no. : 0 421 801 601

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8-7-2-6-3-5-
 4-1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack trave: 7.20
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del.quantity cm³/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm³/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 918

Injection pump
 Pump designation : PE8P120A320LS7838-10
 EP type number : 0 412 628 854
 Governor
 Governor design. : RQ300/1050PA993-4
 Governor no. : 0 421 801 602

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 320.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 22.9...23.1
 100 s: (22.6...23.4)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.8
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1020
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
 Aneroid pressure h: 1000
 Del.quantity : 229.0...231.0
 1000 : (226.0...234.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 1020

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.50...14.70
3rd speed rpm : 800
Rack travel in m: 15.00...15.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 700
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.30...14.50
4th pressure hPa : 1350
Rack travel in m: 14.70...14.90
5th pressure hPa : -
Rack travel in m: 9.00...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 226.0...229.0
1000 s: (223.0...232.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 239.0...243.0
1000 s: (236.0...246.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 u 5
 Edition : 21.08.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 648 927

Injection pump
 Pump designation : PE8P120A320LS7840
 EP type number : 0 412 628 850
 Governor
 Governor design. : RQV300...1050PA797
 -36
 Governor no. : 0 421 813 984

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.70...12.90

Del.quantity cm³/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 600.0

Rack travel in mm : 4.2...4.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 1.10...1.60
2nd speed	rpm	: 470
travel mm		: 3.00...3.50
3rd speed	rpm	: 830
travel mm		: 5.90...6.40
4th speed	rpm	: 1110
travel mm		: 8.20...8.70
5th speed	rpm	: 1183
travel mm		: 9.60...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 700
Del.quantity : 191.0...193.0
1000 : (188.0...196.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.70...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 11.10...11.30
2nd pressure hPa : 440
Rack travel in m: 12.10...12.30
3rd pressure hPa : 900
Rack travel in m: 12.90...13.10
4th pressure hPa : -
Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm³/ : 210.0...213.0
1000 s: (207.0...216.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 800
Del.quantity cm³/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces :
 Test oil : ISO-4113

Combination no. : 0 402 648 928

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1030
 Governor no. : 0 421 801 640

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 233.0...235.0
 1000 : (230.0...238.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80	+	Spread cm ³ : 8.00
Speed rpm : 1090...1105		1000 s: (12.0)
2nd rack travel in: 4.00	+	
Speed rpm : 1170...1200		
4th rack travel in: 1350	+	
Speed rpm : 0.00...1.50		
LOW IDLE 1	+	
Setting point w/out bumper spring		BREAKAWAY
Speed rpm : 300	+	1st version
Rack travel in mm : 5.5		1mm rack travel less than
Testing:	+	full load rack tr: 11.80
Speed rpm : 200		Speed rpm : 1090...1105
Minimum rack trave: 7.60	+	
Speed rpm : 300		STARTING FUEL DELIVERY
Rack travel in mm : 5.40...5.60	+	
Rack travel in mm : 2.00		Speed rpm : 100
Speed rpm : 360...400	+	Del.quantity cm ³ / : 45.0...65.0
TORQUE CONTROL		1000 s: (41.0...69.0)
Dimension a mm : 0.50	+	Rack travel in mm : 10.50...10.70
Torque control curve - 1st version		
1st speed rpm : 1050	+	Remarks:
Rack travel in m: 12.80...13.00		:
2nd speed rpm : 800	+	
Rack travel in m: 13.40...13.60		
Aneroid/Altitude Compensator Test	+	
1st version		
Setting	+	
Speed rpm : 500		
Pressure hPa : -	+	
Rack travel mm : 10.50...10.70		
Measurement	+	
Speed 1/min : 500		
1st pressure hPa : 300	+	
Rack travel in m: 11.10...11.20		
2nd pressure hPa : 650	+	
Rack travel in m: 12.60...12.80		
FUEL DELIVERY CHARACTERISTICS	+	
1st version		
Aneroid pressure h: 1200	+	
Speed rpm : 1050		
Del.quantity cm ³ / : 206.0...209.0	+	
1000 s: (203.0...212.0)		
Spread cm ³ : 8.00	+	
1000 s: (12.0)		
Aneroid pressure h: -	+	
Speed rpm : 500		
Del.quantity cm ³ / : 131.0...133.0	+	
1000 s: (128.0...136.0)		

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 929

Injection pump
 Pump designation : PE8P120A32ULS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQV300...950PA1033-1
 Governor no. : 0 421 813 991

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.8
 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.10...1.50
2nd speed	rpm	: 567
	travel mm	: 4.40...5.00
3rd speed	rpm	: 780
	travel mm	: 6.00...6.60
4th speed	rpm	: 1010
	travel mm	: 8.50...8.70
5th speed	rpm	: 1190
	travel mm	: 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1080
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack trave: 9.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.90...13.10
2nd speed rpm : 825
Rack travel in m: 13.20...13.40
3rd speed rpm : 700
Rack travel in m: 13.50...13.60

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 250.0...290.0
1000 s: (246.0...294.0)
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 930

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1031-2
 Governor no. : 0 421 801 645

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...290.0
1000 s: (246.0...294.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/950PA1032-1
 Governor no. : 0 421 801 646

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm3 : 8.0
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 933

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/950PA1031-3
 Governer no. : 0 421 801 646

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.60

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 990...1005

2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack trave: 8.70
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 390...430

TORQUE CONTROL
Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.90...13.10
2nd speed rpm : 800
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 935

Injection pump
 Pump designation : PE8P120A320LS7840-10
 EP type number : 0 412 628 856
 Governor
 Governor design. : RQV300...950PA1033-3
 Governor no. : 0 421 813 997

Customer-spec. information:
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

: Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.8
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.10...1.50
2nd speed	rpm	: 567
	travel mm	: 4.40...5.00
3rd speed	rpm	: 780
	travel mm	: 6.00...6.60
4th speed	rpm	: 1010
	travel mm	: 8.50...8.70
5th speed	rpm	: 1190
	travel mm	: 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
 Speed rpm : 1080
 Rack travel in mm : 11.00...13.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack trave: 8.40
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 700
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³ : 208.0...214.0
1000 s: (205.0...217.0)
Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 936
 Injection pump
 Pump designation : PE8P120A320LS7840-10
 EP type number : 0 412 628 856
 Governor
 Governor design. : RQ300/950PA1032-2
 Governor no. : 0 421 801 650

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A
 1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 20.9...21.1

100 s: (20.5...21.4)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.8
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 209.0...211.0
 1000 : (206.0...214.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 700
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 208.0...214.0
1000 s: (205.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 990...1005
STARTING FUEL DELIVERY
Speed rpm : 100
Del.quantity cm3/ : 55.0...75.0
1000 s: (51.0...79.0)
Rack travel in mm : 11.00...11.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/950PA1032-4
 Governor no. : 0 421 801 661

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1200

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 200

Minimum rack trave: 8.80

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.00...13.10

2nd speed rpm : 600

Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.40...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 350

Rack travel in m: 11.00...11.10

2nd pressure hPa : 750

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 600

Del.quantity cm³/ : 227.0...231.0

1000 s: (224.0...234.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 10.40...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQV300...950PA1033-7
 Governer no. : 0 421 814 019

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.10...1.50
2nd speed	rpm	: 567
	travel mm	: 4.40...5.00
3rd speed	rpm	: 780
	travel mm	: 5.00...6.60
4th speed	rpm	: 1010
	travel mm	: 8.50...8.70
5th speed	rpm	: 1190
	travel mm	: 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950

Aneroid pressure h: 1200
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 9.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 300...390

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.40...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.00...11.10
2nd pressure hPa : 750
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 227.0...231.0
1000 s: (224.0...234.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1000

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 942

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/950PA1031-6
 Governer no. : 0 421 801 662

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm³/ : 1.0...1.5

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1200

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 390...430

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 13.90...14.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.40...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.00...11.10
2nd pressure hPa : 750
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 227.0...231.0
1000 s: (224.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1005

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 676 812

Injection pump
 Pump designation : PE6P120A320LS7808-3
 EP type number : 0 412 626 870
 Governor
 Governor design. : RSV425...1050POA535-6
 Governor no. : 0 421 833 378

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 441 LA

1st version kW : 249.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.40

Del.quantity cm³/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 425.0

Rack travel in mm : 4.7...5.3

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 14.00
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1135...1153
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 430...490

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

2nd speed rpm : 1030
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.10...10.30
2nd pressure hPa : 600
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1300
Rack travel in m: 14.90...15.10
4th pressure hPa : -
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1030

Del.quantity cm³/ : 245.0...247.0
1000 s: (242.0...250.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 246.0...249.0
1000 s: (243.0...252.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:
Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 678 816

Injection pump
 Pump designation : PE8P120A320LS7857
 EP type number : 0 412 628 866
 Governor
 Governor design. : RSV550...1050POA826-
 3
 Governor no. : 0 421 833 382

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442LA
 1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 19.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.50...13.60

Del.quantity cm³ : 25.9...26.1

100 s: (25.6...26.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 550.0

Rack travel in mm : 4.0...4.6

Del.quantity cm³ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 259.0...261.0

1000 : (256.0...264.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.50
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1500
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: ?
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 550
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 560...620

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.60...13.80
3rd speed rpm : 900
Rack travel in m: 14.00...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 14.80...15.20

Remarks:

:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 678 817

Injection pump
 Pump designation : PE8P120A320LS7856
 EP type number : 0 412 628 867
 Governor
 Governor design. : RSV550...1050POA826-4
 Governor no. : 0 421 833 383

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 320.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 19.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5- 4- 1

Phasing : 0-45-90-135-180-225-
 : 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 22.4...22.6

100 s: (22.1...22.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 550.0

Rack travel in mm : 4.0...4.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 224.0...226.0

1000 : (221.0...229.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: ?

Speed rpm : 100
Rack travel in mm : 14.80...15.20

Testing:

1st rack travel in: 12.70
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1300
Speed rpm : 0.30...1.40

Remarks:

:

LOW IDLE 1

Control lever
position degrees: ?
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 550
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 560...620

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 13.70...13.80
2nd speed rpm : 975
Rack travel in m: 13.80...14.00
3rd speed rpm : 900
Rack travel in m: 14.10...14.30

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 240.0...244.0
1000 s: (237.0...247.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 914

Injection pump
 Pump designation : PES6P120A720LS7238-1
 EP type number : 0 412 726 873
 Governor
 Governor design. : RQ300/1100PA1008
 Governor no. : 0 421 801 591

Customer-spec. information
 Customer : MB-NFZ

Engine : OM447 hLA

1st version kW : 220.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:	Spread	cm ³ : 8.00
1st rack travel in: 13.30	1000 s: (12.0)	
Speed rpm : 1145...1160		
2nd rack travel in: 4.00	BREAKAWAY	
Speed rpm : 1220...1250		
4th rack travel in: 1300	1st version	
Speed rpm : 0.00...1.50	1mm rack travel less than	
LOW IDLE 1	full load rack tr: 13.30	
Setting point w/out bumper spring	Speed rpm : 1145...1160	
Speed rpm : 300		
Rack travel in mm : 6.5	Remarks:	:
Testing:		
Speed rpm : 200		
Minimum rack trave: 8.40	* Increase in control-rod travel with	
Speed rpm : 300	respect to setting at least 0.1 mm	
Rack travel in mm : 6.20...6.80		
Rack travel in mm : 2.00		
Speed rpm : 370...410		
Aneroid/Altitude Compensator Test		
1st version		
Setting		
Speed rpm : 600		
Pressure hPa : 600		
Rack travel mm : 13.70...13.90		
Measurement		
Speed 1/min : 600		
1st pressure hPa : 150		
Rack travel in m: 11.50...11.70		
2nd pressure hPa : 350		
Rack travel in m: 13.00...13.20		
3rd pressure hPa : 800		
Rack travel in m: 13.80...14.00 *		
4th pressure hPa : 950		
Rack travel in m: 14.20...14.40		
5th pressure hPa : -		
Rack travel in m: 11.00...11.20		
FUEL DELIVERY CHARACTERISTICS		
1st version		
Aneroid pressure h: 1400		
Speed rpm : 1100		
Del.quantity cm ³ / : 221.0...224.0		
1000 s: (218.0...227.0)		
Spread cm ³ : 8.00		
1000 s: (12.0)		
Aneroid pressure h: -		
Speed rpm : 500		
Del.quantity cm ³ / : 140.0...142.0		
1000 s: (137.0...145.0)		

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 921

Injection pump
 Pump designation : PES6P120A720LS7242-1
 EP type number : 0 412 726 874
 Governor
 Governor design. : RQ300/1050PA774-5
 Governor no. : 0 421 801 608

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 306.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 19.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 27.4...27.6

100 s: (27.1...27.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.6...5.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 274.0...276.0

1000 : (271.0...279.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.9

Testing:

Speed rpm : 200
Minimum rack trave: 7.00
Speed rpm : 300
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 13.20...13.40
3rd speed rpm : 700
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 9.80...10.00
2nd pressure hPa : 700
Rack travel in m: 12.10...12.30
3rd pressure hPa : 1300
Rack travel in m: 13.50...13.70
4th pressure hPa : 1425
Rack travel in m: 13.90...14.10
5th pressure hPa : -
Rack travel in m: 8.20...8.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 269.0...272.0
1000 s: (266.0...275.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 700
Del.quantity cm3/ : 297.0...301.0
1000 s: (294.0...304.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 290.0...310.0
1000 s: (286.0...314.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : D 402 746 922

Injection pump
 Pump designation : PES6P120A720LS7238-1
 EP type number : D 412 726 873
 Governor
 Governor design. : RQ300/1100PA1008
 Governer no. : D 421 801 591

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 13.00
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack trave: 8.40
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 150
Rack travel in m: 11.50...11.70
2nd pressure hPa : 350
Rack travel in m: 13.00...13.20
3rd pressure hPa : 800
Rack travel in m: 13.80...14.00 *
4th pressure hPa : 950
Rack travel in m: 14.20...14.40
5th pressure hPa : -
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 221.0...224.0
1000 s: (218.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 933
 Injection pump
 Pump designation : PES6P120A720LS7262
 EP type number : 0 412 726 875
 Governor
 Governor design. : RQV350...1050PA1040
 Governer no. : 0 421 814 007
 Customer-spec. information
 Customer : MTU
 Engine : 6R183-02

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed	rpm	: 1050
Rack travel in mm : 13.90...14.00		
Del.quantity cm ³ /		
100 s: (32.7...33.5)		
Spread	cm ³	: 0.5
100 s: (0.9)		
2nd speed	rpm	: 350.0
Rack travel in mm : 4.7...5.1		
Del.quantity cm ³ /		
100 s: (1.4...2.6)		
Spread	cm ³	: 0.8
100 s: (1.2)		

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 350
travel mm		: 1.30...1.80
2nd speed	rpm	: 455
travel mm		: 2.80...3.30
3rd speed	rpm	: 900
travel mm		: 5.40...5.90
4th speed	rpm	: 1107
travel mm		: 7.80...8.30
5th speed	rpm	: 1204
travel mm		: 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1180
 Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1600

Del.quantity : 330.0...332.0
1000 : (327.0...335.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 250
Minimum rack trave: 7.20
Speed rpm : 350
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 350...550

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1600
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.50...7.70
2nd pressure hPa : 1200
Rack travel in m: 13.60...13.70
3rd pressure hPa : 400
Rack travel in m: 9.20...9.50

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 750
Del.quantity cm³/ s : 333.0...337.0
1000 s: (330.0...340.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ s : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ s : 385.0...405.0
1000 s: (381.0...409.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 766 801
 Injection pump
 Pump designation : PES6P120A720/3LS7155
 -1
 EP type number : 0 412 726 880
 Governor
 Governor design. : RSV350...1050POA529
 -1
 Governor no. : 0 421 833 295
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM447 LA
 1st version kW : 265.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.5...4.8
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
 Aneroid pressure h: 1400
 Del.quantity : 240.0...242.0
 1000 : (237.0...245.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 12.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.6
Speed rpm : 350
Rack travel in mm : 4.50...4.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.50
2nd speed rpm : 825
Rack travel in m: 14.30...14.50
3rd speed rpm : 930
Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 650
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 10.70...10.90
2nd pressure hPa : 400
Rack travel in m: 11.40...11.60
3rd pressure hPa : 850
Rack travel in m: 13.20...13.40
4th pressure hPa : 950
Rack travel in m: 13.70...13.90
5th pressure hPa : -
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 650
Speed rpm : 600
Del.quantity cm³/ 1000 s: 234.0...237.0
Spread cm³ : 8.00
1000 s: (231.0...240.0)
Aneroid pressure h: 1400
Speed rpm : 825
Del.quantity cm³/ 1000 s: 263.0...266.0
Spread cm³ : 8.00
1000 s: (260.0...269.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ 1000 s: 151.0...154.0
Spread cm³ : 8.00
1000 s: (148.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 463
 Injection pump
 Pump designation : PES6A95D120RS2834
 EP type number : 9 400 084 032
 Governor
 Governor design. : RSV400...1100A8C2259
 -1R
 Governor no. : 9 420 083 261
 Customer-spec. information
 Customer : CUMMINS
 Engine : 6BT 5.9 L
 1st version kW : 108.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm³/

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 490...550

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 700
Rack travel in m: 11.50...11.60
3rd speed rpm : 900
Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 92.5...94.5
1000 s: (90.5...96.5)
Speed rpm : 900
Del.quantity cm³/ : 84.5...87.5
1000 s: (82.5...89.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (137.0...163.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...5.20

Del.quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3355079

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,9 b 1
 Edition : 21.08.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 9 400 085 243

Injection pump
 Pump designation : PES4A80D320RS1282-1
 EP type number : 9 400 083 097
 Governor
 Governor design. : RS350/1500A2B2073-2R
 Governer no. : 9 420 083 194

Customer-spec. information
 Customer : MWM

Engine : D 229-4

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75
 : (2.60...2.80)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 9.20...9.30

Del.quantity cm³/ : 5.8...5.9

100 s: (5.6...6.0)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 0.7...1.1

100 s: (0.5...1.2)

Spread cm³ : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel. in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Del.quantity : 58.0...59.0

1000 : (56.5...60.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 8.20

Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1585...1615
4th rack travel in: 1700
Speed rpm : 0.30...1.70

Remarks:

:

LOW IDLE 1
Control lever
position degrees: 28...36
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:
Speed rpm : 250
Minimum rack trave: 6.80
Speed rpm : 350
Rack travel in mm : 6.00...6.20
Rack travel in mm : 4.00
Speed rpm : 430...490
Speed rpm : 700
Maximum rack trave: 3.20

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1500
Rack travel in m: 9.20...9.30
2nd speed rpm : 500
Rack travel in m: 10.60...10.70
3rd speed rpm : 900
Rack travel in m: 10.20...10.40
4th speed rpm : 1200
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 58.5...60.5
1000 s: (56.5...62.5)
Speed rpm : 900
Del.quantity cm³/ : 63.0...65.0
1000 s: (61.0...67.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.20
Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 348
 Injection pump
 Pump designation : PES6A95D410RS2812
 EP type number : 9 400 084 028
 Governor
 Governor design. : RSV350...900A7C627-3
 R
 Governor no. : 9 420 083 263
 Customer-spec. information
 Customer : MWM
 Engine : 6.10 TCA
 1st version kW : 154.5
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - * : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference * CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 13.90...14.00
 Del.quantity cm³/ : 13.6...13.8
 100 s: (13.4...14.0)

Spread cm³ : 0.3
 100 s: (0.6)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 1.5...1.9
 100 s: (1.3...2.2)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Del.quantity : 136.5...138.5
 1000 : (134.5...140.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...105

Testing:

1st rack travel in: 13.00
Speed rpm : 900...904
2nd rack travel in: 4.00
Speed rpm : 928...940
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...420

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.90...14.00
2nd speed rpm : 550
Rack travel in m: 13.90...14.10
5th speed rpm : 400
Rack travel in m: 15.20...15.80

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 349
 Injection pump
 Pump designation : PES6A95D410RS2812
 EP type number : 9 400 084 028
 Governor
 Governor design. : RQV350...1250AB1260-
 1L
 Governor no. : 9 420 080 330
 Customer-spec. information
 Customer : MWM
 Engine : 6.10 T
 1st version kW : 129.5
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27
 Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - * : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference * CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.50...12.60
 Del.quantity cm³/ : 10.7...10.9
 100 s: (10.5...11.1)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 1.0...1.4
 100 s: (0.8...1.5)

Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1350
	travel mm	: 7.10...7.30
2nd speed	rpm	: 300
	travel mm	: 0.80...1.30
3rd speed	rpm	: 550
	travel mm	: 2.50...3.00
4th speed	rpm	: 800
	travel mm	: 3.70...4.20
5th speed	rpm	: 1500
	travel mm	: 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1490
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 800
Del.quantity : 107.0...109.0
1000 : (105.0...111.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:

1st rack travel in: 10.70
Speed rpm : 1305...1315
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1630
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 325...475

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 1250
Rack travel in m: 11.70...11.80
3rd speed rpm : 800
Rack travel in m: 12.50...12.60
4th speed rpm : 1150
Rack travel in m: 12.00...12.10

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 315
Rack travel in m: 10.90...11.00
3rd pressure hPa : 600
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 1250
Del.quantity cm³/ : 97.0...101.0
1000 s: (95.0...103.0)
Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm³/ : 106.0...109.0
1000 s: (104.0...111.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 70.5...72.5
1000 s: (68.5...74.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1305...1315

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 10.0...14.0
1000 s: (8.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 085 350

Injection pump
 Pump designation : PES6A95D410RS2772
 EP type number : 9 400 084 018
 Governor
 Governor design. : RQV300...1300AB1066-12
 Governor no. : 9 420 080 331

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 154.5
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.08)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:

1st rack travel in: 10.10
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rpm : 420...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.90
2nd pressure hPa : 400
Rack travel in m: 10.73...10.50
3rd pressure hPa : 270
Rack travel in m: 9.00...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...90.0
1000 s: (-)
Rack travel in mm : 13.60...13.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 085 351

Injection pump
 Pump designation : PES6A95D410RS2772
 EP type number : 9 400 084 018
 Governor
 Governor design. : RGV300...1300AB1066-
 13L
 Governor no. : 9 420 080 240

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 147.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.08)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm³/

100 s: (9.5...10.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm³/

100 s: (0.6...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-layer position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:

1st rack travel in: 10.10
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rpm : 420...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.70
2nd pressure hPa : 500
Rack travel in m: 10.40...10.50
3rd pressure hPa : 350
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 84.0...87.0
1000 s: (81.5...89.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 59.0...61.0
1000 s: (57.0...63.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...97.0
Rack travel in mm : 13.40...13.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 352
 Injection pump
 Pump designation : PES6A95D410RS2795
 EP type number : 9 400 084 020
 Governor
 Governor design. : RSV350...1050A0C1150
 -7L
 Governer no. : 9 420 085 287
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM 366
 1st version kW : 70.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 7.80...7.90

Del.quantity cm³/ : 4.7...4.9

100 s: (4.5...5.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm³/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 47.5...49.5

1000 : (45.5...51.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 101...109

Testing:

1st rack travel in: 6.80

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 81...89

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00

Speed rpm : 555...615

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 7.80...7.90

2nd speed rpm : 600

Rack travel in m: 9.20...9.30

4th speed rpm : 900

Rack travel in m: 8.10...8.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm³/ : 52.5...55.5

1000 s: (50.5...57.5)

Speed rpm : 900

Del.quantity cm³/ : 52.0...55.0

1000 s: (50.0...57.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 6.80

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 78.0...90.0

1000 s: (75.0...93.0)

Rack travel in mm : 12.90...13.10

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A4
 Edition : 10.12.91
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1625L217-2B
 Type number : 0 460 414 031
 Customer Part-No. :

Customer-specific information
 Customer : PENTA

Engine : TAM 31

Power KW: 81

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0,02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000

Setting value mm: 2.30...2.70

Supply-pump pressure

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value bar: 6.10...6.70

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 83.50...84.50
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
 Del. quantity cm³/
 1000S.: 51.00...52.00

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 23.00...27.00
 Del. quantity cm³/ : 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1800
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 31.00...37.00

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 95.00...135.00
 mind 1000S.: 95.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1625
 Charge press hPa: 1000
 TD travel mm: 3.10...3.90
 mm: (2.80...4.20)

3rd speed 1/min: 1500
 Charge press hPa: 1000
 TD travel mm: 2.30...2.70
 mm: (1.80...3.20)

4th speed 1/min: 1300
 Charge press hPa: 1000
 TD travel mm: 0.50...1.30
 mm: (0.20...1.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1625
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.60...7.20
 2nd speed 1/min: 1500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.10...6.70
 3rd speed 1/min: 800
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.40...4.00

Overflow quantity at overflow valve:

1st speed 1/min: 800
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 41.70...83.40
 2nd speed 1/min: 1625
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 55.60...139.00
 3rd speed 1/min: 1500
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 40.60...154.00

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting point hPa: 300
 LDA-stroke mm: 6.4
 Del. quantity cm³/: 65.00...66.00
 1000S.: (63.20...67.80)
 2nd speed 1/min: 1970
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: -
 3rd speed 1/min: 1880
 Charge press. hPa: 1000
 Del. quantity cm³/: 3.00...11.00
 1000S.: (2.00...12.00)
 5th speed 1/min: 1800
 Charge press. hPa: 1000
 Del. quantity cm³/: 31.00...37.00
 1000S.: (30.00...38.00)
 9th speed 1/min: 1625
 Charge press. hPa: 1000
 Del. quantity cm³/: 78.50...81.50
 1000S.: (77.00...83.00)
 12th speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/: 83.50...84.50
 1000S.: (81.70...86.30)
 15th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/: 91.70...94.30
 1000S.: (90.70...95.30)

18th speed 1/min: 650
 Charge press. hPa: -
 Del. quantity cm³/: 51.00...52.00
 1000S.: (49.20...53.80)
 20th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/: 90.00...93.00
 1000S.: (88.50...94.50)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1625
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

Shutoff electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350
 Charge press. hPa: -
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 350
 Del. quantity cm³/: 23.00...27.00
 1000S.: (20.00...30.00)
 Dispersion cm³/: 3.5
 1000S.: (3.5)
 2nd speed 1/min: 480
 Del. quantity cm³/: 0.00...3.00
 1000S.: -
 3rd speed 1/min: 400
 Del. quantity cm³/: 7.00...13.00
 1000S.: (5.50...14.50)

Automatic starting fuel delivery:

4th speed 1/min: 100
 Del. quantity cm³/: 95.00...135.00
 1000S.: -

Shutoff electromagnet:

Cut-in min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: -
KF	mm: K-OT

MS	mm: 1.1...1.5	Temperature stabilisation
SVS max.	mm: 0.9	speed 1/min :100
LDA stroke	mm: 6.4	Output temperature, °C :42
XK	mm: 18.8...20.8	Measurement temperature, °C:44
XL	mm: 11.1...14.5	
Remarks:		
	:	
	:	
Operate control lever after each manifold-pressure compensator pressure change.		
* Correction at adjusting nut (46)		
Pushing electromagnet.		
Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!		
Information additionally required for testing fuel-injection pump:		
TEST PREREQUISITES		
Calibrating-oil return temperature with thermometer, °C	:45	
Calibrating-oil inlet temperature, °C	:35...40	
Dwell speed, 1/min	:1100	
Feedback voltage, mV	:-	
SETTINGS/TEST SPECIFICATIONS		
FOR FUEL-INJECTION PUMP,		
delivery rates		
Test speed, 1/min	:<500	
Temperature stabilisation speed 1/min	:1800	
Output temperature, °C	:51	
Measurement temperature, °C:49		
Test speed, 1/min	:500...799	
Temperature stabilisation speed 1/min	:1800	
Output temperature, °C	:48	
Measurement temperature, °C:46		
Test speed, 1/min	:800...1199	
Temperature stabilisation speed 1/min	:1800/100	
Output temperature, °C	:45	
Measurement temperature, °C:45		
Test speed, 1/min	:1200...1700	

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A5
 Edition : 10.12.91
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1625L217-4B
 Type number : 0 460 414 034
 Customer Part-No. :

Customer-specific information
 Customer : PENTA

Engine : TAM 31

Power KW: 81

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0,02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000

Setting value mm: 2.30...2.70

Supply-pump pressure

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value bar: 6.10...6.70

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 83.50...84.50
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
 Del. quantity cm³/
 1000S.: 51.00...52.00

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 23.00...27.00
 Del. quantity cm³/: 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1800
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 31.00...37.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 95.00...135.00
 mind 1000S.: 95.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed	1/min: 1625
Charge press	hPa: 1000
TD travel	mm: 3.10...3.90
	mm: (2.80...4.20)
3rd speed	1/min: 1500
Charge press	hPa: 1000
TD travel	mm: 2.30...2.70
	mm: (1.80...3.20)
4th speed	1/min: 1300
Charge press	hPa: 1000
TD travel	mm: 0.50...1.30
	mm: (0.20...1.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1625
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.60...7.20
 2nd speed 1/min: 1500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.10...6.70
 3rd speed 1/min: 800
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.40...4.00

Overflow quantity at overflow valve:

1st speed 1/min: 800
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 41.70...83.40
 2nd speed 1/min: 1625
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 55.60...139.00
 3rd speed 1/min: 1970

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
 Charge-air pressure-setting point hPa: 300
 LDA-stroke mm: 6.4
 Del. quantity cm³/: 65.00...66.00
 1000s.: (63.20...67.80)
 2nd speed 1/min: 1970
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000s.: -
 3rd speed 1/min: 1880
 Charge press. hPa: 1000
 Del. quantity cm³/: 3.00...11.00
 1000s.: (2.00...12.00)
 5th speed 1/min: 1800
 Charge press. hPa: 1000
 Del. quantity cm³/: 31.00...37.00
 1000s.: (30.00...38.00)
 9th speed 1/min: 1625
 Charge press. hPa: 1000
 Del. quantity cm³/: 78.50...81.50
 1000s.: (77.00...83.00)
 12th speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/: 83.50...84.50
 1000s.: (81.70...86.30)
 15th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/: 91.70...94.30
 1000s.: (90.70...95.30)

18th speed 1/min: 650
 Charge press. hPa: -
 Del. quantity cm³/: 51.00...52.00
 1000s.: (49.20...53.80)
 20th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/: 90.00...93.00
 1000s.: (88.50...94.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1625
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000s.: -

Shutoff electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350
 Charge press. hPa: -
 Del. quantity cm³/: 0.00...3.00
 1000s.: -

Shutoff electromagnet volt: 24

Idle delivery:

1st speed 1/min: 350
 Del. quantity cm³/: 23.00...27.00
 1000s.: (20.00...30.00)
 Dispersion cm³/: 3.5
 1000s.: (3.5)
 2nd speed 1/min: 480
 Del. quantity cm³/: 0.00...3.00
 1000s.: -
 3rd speed 1/min: 400
 Del. quantity cm³/: 7.00...13.00
 1000s.: (5.50...14.50)

Automatic starting fuel delivery:

4th speed 1/min: 100
 Del. quantity cm³/: 95.00...135.00
 1000s.: -

Shutoff electromagnet:

Cut-in min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT

MS mm: 1.1...1.5
SVS max. mm: 0.9
LDA stroke mm: 6.4
XK mm: 18.8...20.8
XL mm: 11.1...14.5

Remarks:

:
:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Pushing electromagnet.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :1800
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :1800
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :1800/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 R
 Edition : 10.12.91
 replaces : 24.10.89
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R294
 Type number : 0 460 414 054
 Customer Part-No. :

Customer-specific information
 Customer : SOFIM

Engine : 8140.27.200

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Prestroke mm: -
 (from BDC): -

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.10...1.50
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value bar: 5.80...6.40
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 54.50...55.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 650
 Del. quantity cm³/
 1000S.: 27.50...28.50
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 13.00...17.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 6.0
 1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 20.50...26.50
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³: 40.00...80.00
 mind 1000S.: 40.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1100
 Charge press. hPa: 1000

Inj.-qty. cm³/
 difference 1000s.: 25.0...33.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 TD-travel
 difference mm: 0.40...0.60
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
 Charge press hPa: 1000
 TD travel mm: 5.00...5.80
 mm: (4.70...6.10)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.10...1.50
 mm: (0.60...2.00)
 Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.60...4.40
 mm: (3.30...4.70)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.80...6.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650

charge press. hPa: -
 shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 charge press. hPa: 1000
 shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 charge-air pressure-setting
 point hPa: 450
 LDA-stroke mm: 6,5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 36.50...37.50
 1000s.: (33.00...41.00)
 2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000s.: -
 5th speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 20.50...26.50
 1000s.: (19.00...28.00)
 8th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.50...48.50
 1000s.: (38.50...50.50)
 9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 50.00...56.00
 1000s.: (49.50...56.50)
 11th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 52.50...57.50
 1000s.: (51.00...59.00)
 12th speed 1/min: 1800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³: 54.50...55.50
 1000s.: (51.50...58.50)
 15th speed 1/min: 1100

Charge press. hPa: 1000	Shutoff electromagnet Volt: 12
Shutoff electromagnet Volt: 12	
Del. quantity cm ³ /: 51.50...56.50	TD-travel dif.measurement:
1000S.: (50.00...58.00)	correttore anticipo iniezione (SV):
18th speed 1/min: 650	1st speed 1/min: 1100
Charge press. hPa: -	Charge press. hPa: 1000
Shutoff electromagnet Volt: 12	TD-travel : 0.40...1.20
Del. quantity cm ³ /: 27.50...28.50	difference mm: -
1000S.: (24.50...31.50)	Shutoff electromagnet Volt: 12
20th speed 1/min: 650	
Charge press. hPa: 1000	SP press.-dif.measurement:
Shutoff electromagnet Volt: 12	pompa di mandata (FP):
Del. quantity cm ³ /: 50.50...59.50	1st speed 1/min: 1100
1000S.: (49.50...60.50)	Charge press. hPa: 1000
Mech. shutoff:	Supply pump-
Electr. shutoff:	pressure : 0.10...0.30 #
1st speed 1/min: 375	difference bar: -
Del. quantity cm ³ /: 0.00...3.00	
Shutoff electromagnet volt: -	Automatic starting fuel delivery:
Idle delivery:	1st speed 1/min: 350
1st speed 1/min: 375	Shutoff electromagnet Volt: 12
Shutoff electromagnet Volt: 12	Del. quantity cm ³ /: 42.00...78.00
Del. quantity cm ³ /: 13.00...17.00	1000S.: -
1000S.: (11.00...19.00)	
Dispersion cm ³ /: 6.0	2nd speed 1/min: 450
1000S.: (6.5)	Shutoff electromagnet Volt: 12
2nd speed 1/min: 450	Del. quantity cm ³ /: 12.00...48.00
Shutoff electromagnet Volt: 12	1000S.: -
Del. quantity cm ³ /: 0.00...5.00	
1000S.: -	4th speed 1/min: 100
3rd speed 1/min: 325	Shutoff electromagnet Volt: 12
Shutoff electromagnet Volt: 12	Del. quantity cm ³ /: 40.00...80.00
Del. quantity cm ³ /: 39.00...49.00	1000S.: -
1000S.: (38.00...50.00)	
Load-dependent start of delivery:	Shutoff electromagnet:
Inj.-qty.dif.measurement:	Cut-in min voltage : 10.0
1st speed 1/min: 1100	Rated voltage : 12.0
Charge press. hPa: 1000	
Inj.-qty. cm ³ / : 24.5...26.5 #	Mounting and assembly dimensions:
difference 1000S.: -	Designation
KSBAFB valve Volt: 12	K mm: 3.2...3.4
4th speed 1/min: 1100	KF mm: K-OT
Charge press. hPa: 1000	MS mm: 0.6...1.0
Inj.-qty. cm ³ /: 2.00...8.00	SVS max. mm: 2.5
difference 1000S.: -	LDA stroke mm: 6.5
	XK mm: 21.8...23.8
	XL mm: 12.3...15.7
	Remarks:
	: :

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500

Temperature stabilisation speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INU.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 2,5 A1
 Edition : 03.02.92
 replaces : 09.12.91
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R286-1
 Type number : 0 460 414 059
 Customer Part-No. :

Customer-specific information
 Customer : FIAT-AUTO

Engine : M711 AT 19.0

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: -
 (from BDC): -

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value mm: 6.60...7.00

AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 1000
 Setting value bar: 7.30...7.90

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000s.: 47.30...48.30
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 3.0
 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 750
 Del. quantity cm³/
 1000s.: 23.30...24.30
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

11

Low-idle speed regulation

Speed 1/min: 450
 Del. quantity cm³/
 1000s.: 6.00...10.00
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 2400
 Charge press hPa: 1000
 Del. quantity cm³/
 1000s.: 17.00...23.00

KSB/AFB valve	Volt: 12	TD travel	mm: 2.50...3.30 mm: (2.00...3.80)
Shutoff			
electromagnet	Volt: 12		
Start:			
Speed	1/min: 100		
Del. quantity	cm ³ /: 40.00...80.00		
mind	1000S.: 40.00		
KSB/AFB			
Valve	Volt: 12		
Shutoff			
electromagnet	Volt: 12		
Load-dependent start of delivery:			
Inj.-qty.dif.measurement:			
Speed	1/min: 1750		
Charge press	hPa: -		
Inj.-qty.	cm ³ /		
difference	1000S.: 9.00...15.00 *		
KSB/AFB			
valve	Volt: 12		
Shutoff			
electromagnet	Volt: 12		
TD-travel dif.measurement			
correttore anticipo iniezione (SV)			
1.Speed	1/min: 1750		
Charge press	hPa: -		
TD-travel			
difference	mm: 0.50...0.70 *		
KSB/AFB			
valve	Volt: 12		
Shutoff			
electromagnet	Volt: 12		
Inspection-pump test specifications		Supply-pump pressure characteristic:	
Test specifications in parentheses			
Timing-device characteristic:			
2nd speed	1/min: 2100	1st speed	1/min: 1500
Charge press	hPa: 1000	Charge press.	hPa: 1000
TD travel	mm: 9.30...10.10	Supply-pump	pressure bar: 7.30...7.90
	mm: (8.80...10.60)	pressure	bar: (7.10...8.10)
KSB/AFB			
valve	Volt: 12		
Shutoff			
electromagnet	Volt: 12		
3rd speed	1/min: 1500	2nd speed	1/min: 2100
Charge press	hPa: 1000	Charge press.	hPa: 1000
TD travel	mm: 6.60...7.00	Supply-pump	pressure bar: 8.50...9.10
	mm: (6.30...7.30)	pressure	bar: (8.30...9.30)
KSB/AFB			
valve	Volt: 12		
Shutoff			
electromagnet	Volt: 12		
4th speed	1/min: 750		
Charge press	hPa: 1000		

Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.540
 quantity cm³/10s: (60.00...134.50)
 2nd speed 1/min: 2100
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.30...180.70
 quantity cm³/10s: (82.30...195.70)
 Delivery-quant. and breakaway char.:
 1nd speed 1/min: 750*
 Charge-air pressure-setting
 point hPa: 400
 LDA-stroke mm: 6.3
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 32.50...33.50
 1000S.: (28.00...38.00)
 3rd speed 1/min: 2500
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...6.00
 1000S.: -
 5th speed 1/min: 2400
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 17.00...23.00
 1000S.: (16.00...24.00)
 8th speed 1/min: 2300
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 27.00...35.00
 1000S.: -
 9th speed 1/min: 2100
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 45.50...48.50
 1000S.: (43.80...50.20)
 12th speed 1/min: 1750
 Charge press. hPa: 1000

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³: 47.30...48.30
 1000S.: (45.80...49.80)
 13th speed 1/min: 750
 Charge press. hPa: 720
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 45.50...49.50
 1000S.: -
 18th speed 1/min: 750
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 23.30...24.30
 1000S.: (21.30...26.30)
 20th speed 1/min: 750
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 45.50...47.50
 1000S.: -
 21th speed 1/min: 600
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 17.0...20.00
 1000S.: -
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 450
 Del. quantity cm³: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 6.00...10.00
 1000S.: (3.50...12.50)
 Dispersion cm³: 3.0
 1000S.: (3.5)

2nd speed	1/min: 800		Rated voltage : 12,0
KSB/AFB			Mounting and assembly dimensions:
valve	Volt: 12		Designation
Shutoff			K mm: 3,2...3,4
electromagnet	Volt: 12		KF mm: -
Del. quantity cm ³ /:	0.00...2.40		MS mm: 0.6...1.0
1000s.: -			LDA stroke mm: 6,3
3rd speed	1/min: 600		XK mm: 17.0...19.0
KSB/AFB			XL mm: 10.3...13.7
valve	Volt: 12		
Shutoff			
electromagnet	Volt: 12		
Del. quantity cm ³ /:	0.00...3.00		
1000s.: -			
Load-dependent start of delivery:			Remarks:
Inj.-qty.dif.measurement:			Overflow restriction 0.75 mm - Part No. ..343,..344
1st speed	1/min: 1750		Operate control lever after each manifold-pressure compensator pressure change.
Inj.-qty. cm ³ /	: 11.0...13.0 #		* Correction at adjusting nut (46)
difference 1000s.: -			
KSB/AFB			Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!
valve	Volt: 12		
Shutoff			Information additionally required for testing fuel-injection pump:
electromagnet	Volt: 12		
SP press.-dif.measurement:			TEST PREREQUISITES
pompa di mandata (FP):			Calibrating-oil return temperature with thermometer, °C :45
1st speed	1/min: 1750		
Supply pump-			Calibrating-oil inlet temperature, °C :35...40
pressure	: 0.50...0.70 #		
difference bar: -			Dwell speed, 1/min :1100
KSB/AFB			Feedback voltage, mV :-
valve	Volt: 12		
Shutoff			SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates
electromagnet	Volt: 12		
Del. quantity cm ³ /	25.00...55.00		Test speed, 1/min :<500
1000s.: -			Temperature stabilisation speed 1/min :2400
4th speed	1/min: 100		Output temperature, °C :51
KSB/AFB			Measurement temperature, °C:49
valve	Volt: 12		
Shutoff			Test speed, 1/min :500...799
electromagnet	Volt: 12		Temperature stabilisation speed 1/min :2400
Del. quantity cm ³ /	40.00...80.00		Output temperature, °C :48
1000s.: -			Measurement temperature, °C:46
Shutoff electromagnet:			
Cut-in			
min voltage	: 10,0		

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2400/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 R1
Edition : 10.12.91
replaces : 24.10.89
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R294-1
Type number : 0 460 414 066
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.27.200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.10...1.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 54.50...55.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/ : 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm³/
1000S.: 27.50...28.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 13.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 20.50...26.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/ : 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press. hPa: 1000

Inj.-qty. cm³/
 difference 1000s.: 25.0...33.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 TD-travel
 difference mm: 0.40...0.60
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
 Charge press hPa: 1000
 TD travel mm: 5.00...5.80
 mm: (4.70...6.10)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.10...1.50
 mm: (0.60...2.00)
 Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.60...4.40
 mm: (3.30...4.70)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.80...6.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650

Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting
 point hPa: 450
 LDA-stroke mm: 6,5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 36.50...37.50
 1000s.: (33.00...41.00)
 2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000s.: -
 5th speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 20.50...26.50
 1000s.: (19.00...28.00)
 8th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.50...48.50
 1000s.: (38.50...50.50)
 9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 50.00...56.00
 1000s.: (49.50...56.50)
 11th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 52.50...57.50
 1000s.: (51.00...59.00)
 12th speed 1/min: 1800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³: 54.50...55.50
 1000s.: (51.50...58.50)
 15th speed 1/min: 1100

Charge press. hPa: 1000	Shutoff	electromagnet Volt: 12	Shutoff	electromagnet Volt: 12
Del. quantity cm ³ : 51.50...56.50		1000S.: (50.00...58.00)	TD-travel dif.measurement:	
18th speed 1/min: 650			correttore anticipo iniezione (SV):	
Charge press. hPa: -			1st speed 1/min: 1100	
Shutoff			Charge press. hPa: 1000	
electromagnet Volt: 12			TD-travel : 0.40...1.20	
Del. quantity cm ³ : 27.50...28.50		1000S.: (24.50...31.50)	difference mm: -	
20th speed 1/min: 650			Shutoff	
Charge press. hPa: 1000			electromagnet Volt: 12	
Shutoff			SP press.-dif.measurement:	
electromagnet Volt: 12			pompa di mandata (FP):	
Del. quantity cm ³ : 50.50...59.50		1000S.: (49.50...60.50)	1st speed 1/min: 1100	
Mech. shutoff:			Charge press. hPa: 1000	
Electr. shutoff:			Supply pump-	
1st speed 1/min: 375			pressure : 0.10...0.30 #	
Del. quantity cm ³ : 0.00...3.00			difference bar: -	
Shutoff			Automatic starting fuel delivery:	
electromagnet volt: -			1st speed 1/min: 350	
Idle delivery:			Shutoff	
1st speed 1/min: 375			electromagnet Volt: 12	
Shutoff			Del. quantity cm ³ : 42.00...78.00	
electromagnet Volt: 12			1000S.: -	
Del. quantity cm ³ : 13.00...17.00			2nd speed 1/min: 450	
1000S.: (11.00...19.00)			Shutoff	
Dispersion cm ³ : 6.0			electromagnet Volt: 12	
1000S.: (6.5)			Del. quantity cm ³ : 12.00...48.00	
2nd speed 1/min: 450			1000S.: -	
Shutoff			4th speed 1/min: 100	
electromagnet Volt: 12			Shutoff	
Del. quantity cm ³ : 0.00...5.00			electromagnet Volt: 12	
1000S.: -			Del. quantity cm ³ : 40.00...80.00	
3rd speed 1/min: 325			1000S.: -	
Shutoff			Shutoff electromagnet:	
electromagnet Volt: 12			Cut-in	
Del. quantity cm ³ : 39.00...49.00			min voltage : 10.0	
1000S.: (38.00...50.00)			Rated voltage : 12.0	
Load-dependent start of delivery:			Mounting and assembly dimensions:	
Inj.-qty.dif.measurement:			Designation	
1st speed 1/min: 1100			K	mm: 3.2...3.4
Charge press. hPa: 1000			KF	mm: K-OT
Inj.-qty. cm ³ / : 24.5...26.5 #			MS	mm: 0.6...1.0
difference 1000S.: -			SVS max.	mm: 2.5
KSB/AFB			LDA stroke	mm: 6.5
valve Volt: 12			XK	mm: 21.8...23.8
4th speed 1/min: 1100			XL	mm: 12.3...15.7
Charge press. hPa: 1000			Remarks:	:
Inj.-qty. cm ³ : 2.00...8.00				:
difference 1000S.: -				

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500

Temperature stabilisation
speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation
speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation
speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation
speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation
speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 F
 Edition : 05.12.91
 replaces : 07.11.89
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R366
 Type number : 0 460 414 073
 Customer Part-No. :

Customer-specific information
 Customer : FORD

Engine : 2.5l DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 023

Opening Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: -
 (from BDC): -

Start of delivery block
 Piston stroke mm: 0.78
 mm: 0.73...0.83
 Outlet : B

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
 Setting value mm: 2.50...2.90
 Shutoff electromagnet Volt: 12

Supply-pump pressure
 Speed 1/min: 1000
 Setting value bar: 4.80...5.40
 Shutoff electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 30.50...31.50 F
 Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
 Del. quantity cm³/
 1000S.: 16.00...20.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
 Del. quantity cm³/
 1000S.: 30.50...34.50
 Dispersion cm³/: 3.0
 1000S.: (4.0)

Start:

Speed 1/min: 100
 Del. quantity cm³/: 62.00...102.00
 mind 1000S.: 62.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
 TD travel mm: 5.80...6.60
 mm: (5.50...6.90)

Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1250
 TD travel mm: 2.50...2.90
 mm: (2.20...3.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump
 pressure bar: 3.10...3.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Supply-pump
 pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Supply-pump
 pressure bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1950
 Supply-pump
 pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...100.00
 quantity cm³/10s: (40.60...115.00)
 2nd speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Overflow : 83.40...152.90
 quantity cm³/10s: (68.40...168.90)
 Delivery-quant. and breakaway char.:
 1nd speed 1/min: 1950
 HBA-stroke mm: 10,0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 37,7...41,3 D
 1000S.: (37,0...42,0) D
 2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...10.00
 1000S.: -
 3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 18.00...26.00
 1000S.: (16.00...28.00)
 5th speed 1/min: 2100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 30.50...34.50
 1000S.: (27.50...37.50)
 10th speed 1/min: 1700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 38.70...42.30
 1000S.: (38.00...43.00)
 11th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 35,50...36,50 E
 1000S.: (33,50...38,50) E
 12th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³: 30.50...31.50 F
 1000S.: (28,00...34,00) F
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 425
 Del. quantity cm³: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 16.00...20.00
 1000S.: (14.00...22.00)
 Dispersion cm³: 3.0
 1000S.: (4.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 5.00...13.00
 1000S.: (3.00...15.00)
 Part-load del. at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 23.00...24.00
1000S.: (21.00...26.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 24.00...34.00

1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 62.00...102.00

1000S.: -

Shutoff electromagnet:

C/t-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-OT

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Remarks:

:

:

Pump/engine assignment:

Stroke in blocking position 0.73...0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

Adjust part-load delivery:
Setting = 12.0 mm

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation speed 1/min :2100

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation speed 1/min :2100

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation speed 1/min :2100/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 G
 Edition : 05.12.91
 replaces : 07.11.89
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R366-1
 Type number : 0 460 414 074
 Customer Part-No. :

Customer-specific information
 Customer : FORD

Engine : 2.5L DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 023

Opening Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Prestroke mm: -
 (from BDC): -

Start of delivery block
 Piston stroke mm: 0.78
 mm: 0.73...0.83
 Outlet : B

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
 Setting value mm: 2.50...2.90
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 4.80...5.40
 Shutoff electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000s.: 30.50...31.50 F
 Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
 Del. quantity cm³/
 1000s.: 18.00...22.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
 Del. quantity cm³/
 1000s.: 30.50...34.50
 Dispersion cm³/: 3.0
 1000s.: (4.0)

Start:

Speed 1/min: 100
 Del. quantity cm³/: 62.00...102.00
 mind 1000s.: 62.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
 TD travel mm: 5.80...6.60
 mm: (5.50...6.90)
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1250
 TD travel mm: 2.50...2.90
 mm: (2.20...3.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 3.10...3.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Supply-pump pressure bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1950
 Supply-pump pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...100.00
 quantity cm³/10s: (40.60...115.00)
 2nd speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Overflow : 83.40...152.90
 quantity cm³/10s: (68.40...168.90)
 Delivery-quant. and breakaway char.:
 1nd speed 1/min: 1950
 HBA-stroke mm: 10,0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37,7...41,3 D
 1000S.: (37,0...42,0) D
 2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...10.00
 1000S.: -
 3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 18.00...26.00
 1000S.: (16.00...28.00)
 5th speed 1/min: 2100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.50...34.50
 1000S.: (27.50...37.50)
 10th speed 1/min: 1700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 38.70...42.30
 1000S.: (38.00...43.00)
 11th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 35,50...36,50 E
 1000S.: (33,50...38,50)E
 12th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³/: 30.50...31.50 F
 1000S.: (28,00...34,00)F
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 425
 Del. quantity cm³/: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 18.00...22.00
 1000S.: (16.00...24.00)
 Dispersion cm³/: 3.0
 1000S.: (4.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 7.00...15.00
 1000S.: (5.00...17.00)
 Part-load del.at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 23.00...24.00
1000S.: (21.00...26.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 24.00...34.00

1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 62.00...102.00

1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-OT

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Remarks:

:

:

Pump/engine assignment:

Stroke in blocking position 0.73...0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

Adjust part-load delivery:
Setting = 12.0 mm

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C : 45

Calibrating-oil inlet temperature, °C : 35...40

Dwell speed, 1/min : 1100
Feedback voltage, mV : -

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min : <500
Temperature stabilisation speed 1/min : 2100
Output temperature, °C : 51
Measurement temperature, °C: 49

Test speed, 1/min : 500...799
Temperature stabilisation speed 1/min : 2100
Output temperature, °C : 48
Measurement temperature, °C: 46

Test speed, 1/min : 800...1199
Temperature stabilisation speed 1/min : 2100/100
Output temperature, °C : 45
Measurement temperature, °C: 45

Test speed, 1/min : 1200...1700
Temperature stabilisation speed 1/min : 100
Output temperature, °C : 42
Measurement temperature, °C: 44

Test speed, 1/min : 1700
Temperature stabilisation speed 1/min : 100
Output temperature, °C : 41
Measurement temperature, °C: 43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 H
 Edition : 05.12.91
 replaces : 07.11.89
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R366-2
 Type number : 0 460 414 075
 Customer Part-No. :

Customer-specific information
 Customer : FORD

Engine : 2.5L DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 023

Opening Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Prestroke mm: -
 (from BDC): -

Start of delivery block

Piston stroke mm: 0.78
 mm: 0.73...0.83
 Outlet : B

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
 Setting value mm: 2.50...2.90
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 4.80...5.40
 Shutoff electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 30.50...31.50 F
 Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
 Del. quantity cm³/
 1000S.: 16.00...20.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
 Del. quantity cm³/
 1000S.: 30.50...34.50
 Dispersion cm³/: 3.0
 1000S.: (4.0)

Start:

Speed 1/min: 100
 Del. quantity cm³/: 62.00...102.00
 mind 1000S.: 62.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
 TD travel mm: 5.80...6.60
 mm: (5.50...6.90)
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1250
 TD travel mm: 2.50...2.90
 mm: (2.20...3.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 3.10...3.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Supply-pump pressure bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1950
 Supply-pump pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...100.00
 quantity cm³/10s: (40.60...115.00)
 2nd speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Overflow : 83.40...152.90
 quantity cm³/10s: (68.40...168.90)
 Delivery-quant. and breakaway char.:
 1nd speed 1/min: 1950
 HBA-stroke mm: 10,0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 37,7...41,3 D
 1000S.: (37,0...42,0) D
 2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...10.00
 1000S.: -
 3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 18.00...26.00
 1000S.: (16.00...28.00)
 5th speed 1/min: 2100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 30.50...34.50
 1000S.: (27.50...37.50)
 10th speed 1/min: 1700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 38.70...42.30
 1000S.: (38.00...43.00)
 11th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 35,50...36,50 E
 1000S.: (33,50...38,50)E
 12th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³: 30.50...31.50 F
 1000S.: (28,00...34,00)F
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 425
 Del. quantity cm³: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 16.00...20.00
 1000S.: (14.00...22.00)
 Dispersion cm³: 3.0
 1000S.: (4.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 5.00...13.00
 1000S.: (3.00...15.00)
 Part-load del.at 3rd inj.-qty.
 terza ferma della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 23.00...24.00
1000S.: (21.00...26.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 24.00...34.00

1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 62.00...102.00

1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-0T

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Remarks:

:

:

Pump/engine assignment:

Stroke in blocking position 0.73...0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

Adjust part-load delivery:
Setting = 12.0 mm

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2.5 R3
 Edition : 12.11.91
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R368
 Type number : 0 460 414 076
 Customer Part-No. :

Customer-specific information
 Customer : SOFIM

Engine : 8140.27.2580/82

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: -
 (from BDC): -

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 2.20...2.60
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value bar: 5.50...6.10
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 55.00...56.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 16.50...17.50
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325
 Del. quantity cm³/
 1000S.: 10.00...14.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.0
 1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 19.50...25.50
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 40.00...80.00
 mind 1000S.: 40.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1300
 Charge press. hPa: 1000

Inj.-qty. cm³/
 difference 1000s.: 22.00...30.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1300
 Charge press hPa: 1000
 TD-travel
 difference mm: 1.90...2.10
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1300
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: 0.10...0.30
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900
 Charge press hPa: 1000
 TD travel mm: 7.10...7.90
 mm: (6.80...8.20)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.20...2.60
 mm: (1.70...3.10)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 0.60...1.40
 mm: (0.30...1.70)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.60...4.20
 bar: (3.30...4.50)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.50...6.10
 bar: (5.20...6.40)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.60...8.20
 bar: (7.30...8.50)
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting
 point hPa: 400
 LDA-stroke mm: 6.5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.50...43.50
 1000s.: (39.00...47.00)
 2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000s.: (0.00...5.00)
 5th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 19.50...25.50
 1000s.: (18.00...27.00)
 8th speed 1/min: 2000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...48.00
 1000s.: (38.00...50.00)
 9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.00...56.00
 1000s.: (50.00...57.00)
 11th speed 1/min: 1500

Charge press. hPa: 1000	Load-dependent start of delivery:
Shutoff	Inj.-qty.dif.measurement:
electromagnet Volt: 12	4th speed 1/min: 1300
Del. quantity cm ³ /: 52.50...57.50	Charge press. hPa: 1000
1000S.: (51.00...59.00)	Inj.-qty. cm ³ /: 22.00...30.00
12th speed 1/min: 1750	difference 1000S.: (22.00...30.00)
Charge press. hPa: 1000	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	2nd speed 1/min: 1300
Del. quantity cm ³ /: 55.00...56.00	Charge press. hPa: 1000
1000S.: (52.00...59.00)	TD-travel : 1.90...2.10
15th speed 1/min: 1000	difference mm: (1.90...2.10)
Charge press. hPa: 1000	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	2nd speed 1/min: 1300
Del. quantity cm ³ /: 49.50...54.50	Charge press. hPa: 1000
1000S.: (48.00...56.00)	Supply pump-
18th speed 1/min: 500	pressure : 0.10...0.30
Charge press. hPa: -	difference bar: (0.10...0.30)
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm ³ /: 16.50...17.50	Part-load del.at 3rd inj.-qty.
1000S.: (13.50...20.50)	terza fermo della portata
20th speed 1/min: 500	stop (EGR set)
Charge press. hPa: 1000	scarico) (ARF)
Shutoff	gaz d'échappement-ARF)
electromagnet Volt: 12	Spacing mm: 12.0
Del. quantity cm ³ /: 48.50...54.50	
1000S.: (47.50...55.50)	
Mech. shutoff:	
Electr. shutoff:	
1st speed 1/min: 325	1st speed 1/min: 1000
Del. quantity cm ³ /: 0.00...3.00	Charge press. hPa: 1000
1000S.: (0.00...3.00)	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet volt: -	Del. quantity cm ³ /: 6.10...7.10
	1000S.: (3.10...10.10)
Idle delivery:	Automatic starting fuel delivery:
1st speed 1/min: 325	1st speed 1/min: 300
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm ³ /: 10.00...14.00	Del. quantity cm ³ /: 40.00...70.00
1000S.: (8.00...16.00)	1000S.: (40.00...70.00)
Dispersion cm ³ /: 6.0	2nd speed 1/min: 400
1000S.: (6.5)	Shutoff
2nd speed 1/min: 450	electromagnet Volt: 12
Shutoff	Del. quantity cm ³ /: 15.00...45.00
electromagnet Volt: 12	1000S.: (15.00...45.00)
Del. quantity cm ³ /: 0.00...5.00	4th speed 1/min: 100
1000S.: (0.00...5.00)	Shutoff
3rd speed 1/min: 250	electromagnet Volt: 12
Shutoff	Del. quantity cm ³ /: 40.00...80.00
electromagnet Volt: 12	1000S.: (40.00...80.00)
Del. quantity cm ³ /: 31.00...41.00	
1000S.: (30.00...42.00)	Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: KOT
MS mm: 0.6...0.1
SVS max. mm: 0.8
LDA stroke mm: 6.5
XK mm: 20.0...22.0
XL mm: 7.3...12.7

Remarks:

:

:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:45

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheer : SOF
 Edition : 03.07.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R393
 Type number : 0 460 414 078
 Customer Part-No. :

Customer-specific information
 Customer : SOFIM

Engine : 8140.47.2700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.40...1.80
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press hPa: 1000
 Setting value bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 60.50...61.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
 Del. quantity cm³/
 1000S.: 24.50...25.50
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 11.00...15.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.0
 1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 40.00...46.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 40.00...70.00
 mind 1000S.: 40.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1100
 Charge press hPa: 1000
 Inj.-qty. cm³/
 difference 1000S.: 25.50...33.50#

Shutoff
 electromagnet Volt: 12
 TD-travel diff.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 Charge press hPa: 1000
 TD-travel
 difference mm: 0.70...0.90#
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1100
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: 0.10...0.30*
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.90...2.30)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1900
 Charge press. hPa: 1000
 TD travel mm: 5.40...6.20
 mm: (5.40...6.20)
 Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.20...4.00
 mm: (2.90...4.30)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 8.00...8.60
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1500
 Charge press. hPa: 1000

Supply-pump
 pressure bar: 6.80...7.40
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.50
 quantity cm³/10s: (75.00...119.50)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.30...180.70
 quantity cm³/10s: (97.30...180.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 500
 LDA-stroke mm: 6.0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 49.00...50.00
 1000S.: (45.50...53.50)
 2nd speed 1/min: 2300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000S.: (0.00...5.00)
 3rd speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 19.00...27.00
 1000S.: (17.00...29.00)
 5th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.00...46.00
 1000S.: (38.50...47.50)
 9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 57.50...63.50
 1000S.: (57.00...64.00)
 12th speed 1/min: 1800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynqty cm³: 60.50...61.50
 1000S.: (57.50...64.50)

15th speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 56.00...61.00
 1000s.: (54.50...62.50)
 17th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet volt: 12
 Del. quantity cm³: 55.00...60.00
 1000H.: (53.50...61.50)
 18th speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 24.50...25.50
 1000s.: (21.50...28.50)
 20th speed 1/min: 550
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 56.50...65.50
 1000s.: (55.50...66.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 11.00...15.00
 1000s.: (9.00...17.00)
 Dispersion cm³: 6.0
 1000s.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000s.: (0.00...5.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³: 21.70...23.70*
 difference 1000s.: (21.70...23.70)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³: 25.50...33.50#
 difference 1000s.: (25.50...33.50)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm³: 2.00...8.00'
 difference 1000s.: (2.00...8.00)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.70...0.90#
 difference mm: (0.70...0.90)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.40...1.20'
 difference mm: (0.40...1.20)
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30*
 difference bar: (0.10...0.30)
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.00...80.00
 1000s.: (40.00...80.00)

2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 18.00...48.00
 1000s.: (18.00...48.00)
 4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.00...70.00
 1000s.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: K-OT
MS	mm: 0.8...1.2
SVS max.	mm: 3.0
LDA stroke	mm: 6.0

XK	mm: 20.0...22.0	Measurement temperature, °C:45
XL	mm: 13.1...16.5	Test speed, 1/min :1200...1700
Ya	mm: 36.9...40.9	Temperature stabilisation speed 1/min :100
Yb	mm: 42.5...47.9	Output temperature, °C :42
Remarks:	:	Measurement temperature, °C:44
	:	
Operate control lever after each manifold-pressure compensator pressure change.		Test speed, 1/min : 1700
* Correction at adjusting nut (46)		Temperature stabilisation speed 1/min :100
Overflow restriction 0.75 mm - Part No. ..343,..344		Output temperature, °C :41
Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!		Measurement temperature, °C:43
Information additionally required for testing fuel-injection pump:		
TEST PREREQUISITES		
Calibrating-oil return temperature with thermometer, °C	:45	
Calibrating-oil inlet temperature, °C	:35...40	
Dwell speed, 1/min	:1100	
Feedback voltage, mV	:-	
SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates		
Test speed, 1/min	:<500	
Temperature stabilisation speed 1/min	:2100	
Output temperature, °C	:51	
Measurement temperature, °C:49		
Test speed, 1/min	:500...799	
Temperature stabilisation speed 1/min	:2100	
Output temperature, °C	:48	
Measurement temperature, °C:46		
Test speed, 1/min	:800...1199	
Temperature stabilisation speed 1/min	:2100/100	
Output temperature, °C	:45	

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : LEY 2,5 B
 Edition : 18.02.91
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R347-1
 Type number : 0 460 414 080
 Customer Part-No. :

Customer-specific information
 Customer : LANDROVER

Engine : 2,5L DI TCI

Power KW: -
 Speed 1/min: 1900

TEST BENCH REQUIREMENTS

Calibrating-oil!

return temp. °C
 with thermometer : 54.00...56.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 116

Opening
 Pressure bar: 207.00...210.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: -
 (from BDC): -

Start of delivery block
 Piston stroke mm: 1,54
 mm: 0,02(0,06)

Outlet : C

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600
 Charge press. hPa: 1000
 Setting value mm: 3.10...3.50
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1600
 Charge press hPa: 1000
 Setting value bar: 6.10...6.70
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 58.80...59.30
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 3.0
 1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 34.50...35.50
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 10.00...14.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.0
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2000
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 44.50...50.50

Start:

Speed 1/min: 100
 Del. quantity cm³/: 80.00...130.00
 mind 1000S.: 80.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1850
Charge press hPa: 1000
TD travel mm: 4.40...5.20
mm: (3.90...5.70)
Shutoff electromagnet Volt: 12
3rd speed 1/min: 1600
Charge press hPa: 1000
TD travel mm: 3.10...3.50
mm: (2.50...4.10)
Shutoff electromagnet Volt: 12
4th speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.20...2.00)
Shutoff electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1850
Charge press. hPa: 1000
Supply-pump pressure bar: 7.40...8.00
bar: (7.20...8.20)
Shutoff electromagnet Volt: 12
2nd speed 1/min: 1600
Charge press. hPa: 1000
Supply-pump pressure bar: 6.10...6.70
bar: (5.90...6.90)
Shutoff electromagnet Volt: 12
3rd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 5.00...5.60
bar: (4.80...5.80)
Shutoff electromagnet Volt: 12
4th speed 1/min: 1000

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
Shutoff electromagnet Volt: 12
Overflow : 55.60...100.00
quantity cm³/10s: (40.60...115.00)
2nd speed 1/min: 1850
Charge press. hPa: 1000

Shutoff electromagnet Volt: 12
Overflow : 83.40...166.80
quantity cm³/10s: (68.40...181.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
Charge-air pressure-setting point hPa: 300
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 46.50...47.50
1000s.: (43.80...50.20)
3rd speed 1/min: 2200
Charge press. hPa: 1000
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 0.00...10.00
1000s.: (0.00...10.00)
5th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 44.50...50.50
1000s.: (42.50...52.50)
9th speed 1/min: 1850
Charge press. hPa: 1000
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 56.00...60.00
1000s.: (54.80...61.20)
charge press. hPa: 1000
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 0.00...1.50
1000s.: -
12th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff electromagnet Volt: 12
Del. quynity cm³/: 57.80...58.80
1000s.: (55.5...61.10)
15th speed 1/min: 800
Charge press. hPa: 1000
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.50
1000s.: -
18th speed 1/min: 500
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 34.50...35.50
1000s.: (31.80...38.20)
20th speed 1/min: 800
Shutoff electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.00
1000s.: -

Delivery-quant. and breakaway char.:

Inj.-qty.values,temp.-compensated
temperatura

1st speed 1/min: 800

Charge-air pressure-setting
point hPa: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 46.50...47.50
1000S.: (43.80...50.20)

3rd speed 1/min: 2200

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 0.00...10.00
1000S.: (0.00...10.00)

5th speed 1/min: 2000

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 44.50...50.50
1000S.: (42.50...52.50)

9th speed 1/min: 1850

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 56.00...60.00
1000S.: (54.80...61.20)

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 60.50...63.50
1000S.: (62.00...62.00)

12th speed 1/min: 1400

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 58.80...59.80
1000S.: (56.50...62.10)

15th speed 1/min: 800

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 55.50...60.50
1000S.: (58.00...58.00)

18th speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 34.50...35.50
1000S.: (31.80...38.20)

20th speed 1/min: 800

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 39.50...43.50
1000S.: (41.50...41.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (1.50...1.50)

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 10.00...14.00
1000S.: (7.00...17.00)

Dispersion cm³/: 4.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 2.00...8.00

3rd speed 1/min: 600
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 82.00...132.00
1000S.: (80.00...134.00)

2nd speed 1/min: 350
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 80.00...130.00
1000S.: (80.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: KOT

MS mm: -

SVS max. mm: -

Remarks:	Temperature stabilisation speed 1/min :2000 Output temperature, °C :60 Measurement temperature, °C:56
:	Test speed, 1/min :1200...1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :53 Measurement temperature, °C:55
Operate control lever after each manifold-pressure compensator pressure change.	Test speed, 1/min : 1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :51 Measurement temperature, °C:53
* Correction at adjusting nut (46)	
Overflow restriction 0.75 mm - Part No. ..343,..344	
Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket	
Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!	
Information additionally required for testing fuel-injection pump:	
TEST PREREQUISITES	
Calibrating-oil return temperature with thermometer, °C :55	
Calibrating-oil inlet temperature, °C :42...47	
Dwell speed, 1/min :1200	
Feedback voltage, mV :-	
SETTINGS/TEST SPECIFICATIONS	
FOR FUEL-INJECTION PUMP, delivery rates	
Test speed, 1/min :<500	
Temperature stabilisation speed 1/min :2000	
Output temperature, °C :65	
Measurement temperature, °C:61	
Test speed, 1/min :500...799	
Temperature stabilisation speed 1/min :2000	
Output temperature, °C :61	
Measurement temperature, °C:57	
Test speed, 1/min :800...1199	

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 R2
 Edition : 07.10.91
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R294-?
 Type number : 0 460 414 081
 Customer Part-No. :

Customer-specific information
 Customer : SOFIM

Engine : 8140.27.2510/210

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Prestroke mm: -
 (from BDC): -

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.10...1.50
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value bar: 5.80...6.40
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 46.50...47.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
 Del. quantity cm³/
 1000S.: 20.00...21.00
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 13.00...17.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.0
 1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 17.50...23.50
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 40.00...80.00
 mind 1000S.: 40.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1750
 Charge press. hPa: 1000

Inj.-qty. cm ³ /difference	1000S.: 16.5...24.5	Shutoff electromagnet Volt: 12	TD-travel dif.measurement	correttore anticipo iniezione (SV)	1.Speed 1/min: 1750	Charge press hPa: 1000	TD-travel difference mm: 0.3...0.5	Shutoff electromagnet Volt: 12	SP press.-dif.measurement	pompa di mandata (FP)	1.Speed 1/min: 1750	Charge press hPa: 1000	Supply pump pressure difference bar: 0.1...0.3	Shutoff electromagnet Volt: 12	Inspection-pump test specifications Test specifications in parentheses	Timing-device characteristic:	2nd speed 1/min: 1750	Charge press hPa: 1000	TD travel mm: 5.00...5.80	mm: (4.70...6.10)	Shutoff electromagnet Volt: 12	3rd speed 1/min: 1100	Charge press hPa: 1000	TD travel mm: 1.10...1.50	mm: (0.60...2.00)	Shutoff electromagnet Volt: 12	6th speed 1/min: 1500	Charge press. hPa: 1000	TD travel mm: 3.60...4.40	mm: (3.30...4.70)	Shutoff electromagnet Volt: 12	Supply-pump pressure characteristic:	1st speed 1/min: 550	Charge press. hPa: 1000	Supply-pump pressure bar: 4.10...4.70	Shutoff electromagnet Volt: 12	2nd speed 1/min: 1100	Charge press. hPa: 1000	Supply-pump pressure bar: 5.80...6.40	Shutoff electromagnet Volt: 12	3rd speed 1/min: 1750	Charge press. hPa: 1000	Supply-pump pressure bar: 7.70...8.30	Shutoff electromagnet Volt: 12	Overflow quantity at overflow valve:	1st speed 1/min: 550	Shutoff electromagnet Volt: 12	Overflow quantity : 41.70...83.40	quantity cm ³ /10s: (26.70...98.40)	2nd speed 1/min: 1900	Charge press. hPa: 1000	Shutoff electromagnet Volt: 12	Overflow quantity : 55.60...139.00	quantity cm ³ /10s: (40.60...154.00)	Delivery-quant. and breakaway char.:	1nd speed 1/min: 800	charge-air pressure-setting point	hPa: 450	LDA-stroke mm: 2.8	Shutoff electromagnet Volt: 12	Del. quantity cm ³ /1000S.: 37.50...38.50	1000S.: (34.00...42.00)	2nd speed 1/min: 2350	Charge press. hPa: 1000	Shutoff electromagnet Volt: 12	Del. quantity cm ³ /1000S.: 0.00...5.00	1000S.: (0.00...5.00)	5th speed 1/min: 2200	Charge press. hPa: 1000	Shutoff electromagnet Volt: 12	Del. quantity cm ³ /1000S.: 17.50...23.50	1000S.: (16.00...25.00)	8th speed 1/min: 2100	Charge press. hPa: 1000	Shutoff electromagnet Volt: 12	Del. quantity cm ³ /1000S.: 35.50...43.50	1000S.: (33.50...45.50)	9th speed 1/min: 1900	Charge press. hPa: 1000	Shutoff electromagnet Volt: 12	Del. quantity cm ³ /1000S.: 44.00...49.00	1000S.: (43.00...50.00)	10th speed 1/min: 1750	Charge press. hPa: 1000	Shutoff electromagnet Volt: 12
---------------------------------------	---------------------	--------------------------------	---------------------------	------------------------------------	---------------------	------------------------	------------------------------------	--------------------------------	---------------------------	-----------------------	---------------------	------------------------	--	--------------------------------	---	-------------------------------	-----------------------	------------------------	---------------------------	-------------------	--------------------------------	-----------------------	------------------------	---------------------------	-------------------	--------------------------------	-----------------------	-------------------------	---------------------------	-------------------	--------------------------------	--------------------------------------	----------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------	-------------------------	---------------------------------------	--------------------------------	--------------------------------------	----------------------	--------------------------------	-----------------------------------	--	-----------------------	-------------------------	--------------------------------	------------------------------------	---	--------------------------------------	----------------------	-----------------------------------	----------	--------------------	--------------------------------	--	-------------------------	-----------------------	-------------------------	--------------------------------	--	-----------------------	-----------------------	-------------------------	--------------------------------	--	-------------------------	-----------------------	-------------------------	--------------------------------	--	-------------------------	-----------------------	-------------------------	--------------------------------	--	-------------------------	------------------------	-------------------------	--------------------------------

Del. quantity cm³/: 46.50...47.50
 1000S.: (43.50...50.50)
 11th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.50...49.50
 1000S.: (43.00...51.00)
 12th speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.00...49.00
 1000S.: (42.50...50.50)
 18th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20.00...21.00
 1000S.: (17.00...24.00)
 20th speed 1/min: 550
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37.00...43.00
 1000S.: (36.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 13.00...17.00
 1000S.: (11.00...19.00)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)
 3rd speed 1/min: 325
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37.00...47.00
 1000S.: (36.00...48.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

4th speed 1/min: 1750
 Charge press. hPa: 1000

Inj.-qty. cm³/: 16.50...24.50
 difference 1000S.: (16.50...24.50)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1750
 Charge press. hPa: 1000
 TD-travel : 0.30...0.50
 difference mm: (0.30...0.50)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1750
 Charge press. hPa: 1000
 Supply pump-pressure : 0.10...0.30
 difference bar: (0.10...0.30)
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...78.00
 1000S.: (42.00...78.00)

2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 12.00...48.00
 1000S.: (12.00...48.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 0.6...1.0
SVS max.	mm: 2.5
LDA stroke	mm: 2.8
XK	mm: 20.0...22.0
XL	mm: 12.6...16.0

Remarks:

:
 Always pay attention to test
 instructions for DISTRIBUTOR-TYPE

INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS

FOR FUEL-INJECTION PUMP,

delivery rates

Test speed, 1/min :<500

Temperature stabilisation speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 09.04.92
 replaces : 13.09.91
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2250R413
 Type number : 0 460 414 082
 Customer Part-No. :

Customer-specific information
 Customer : PERKINS

Engine : T 4.20 (V)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: -
 (from BDC): -

Start of delivery block
 Piston stroke mm: 1,2
 mm: +0,02(0,06)
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 800

Setting value mm: 4.00...4.40
 AFB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press. hPa: 800
 Setting value bar: 7.30...7.90
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
 Charge press. hPa: 800
 Del. quantity cm³/
 1000S.: 66.50...67.50
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 625
 Del. quantity cm³/
 1000S.: 29.50...30.50
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 9.00...11.00
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2525
 Charge press. hPa: 800
 Del. quantity cm³/
 1000S.: 23.50...25.50

11

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Start:

 Speed 1/min: 100
 Del. quantity cm³: 70.00...100.00
 mind 1000S.: 70.00
 KSB/AFB
 Valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Inspection-pump test specifications
 Test specifications in parentheses

 Timing-device characteristic:

 2nd speed 1/min: 2000
 Charge press hPa: 800
 TD travel mm: 6.10...6.90
 mm: (5.80...7.20)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1500
 Charge press hPa: 800
 TD travel mm: 4.00...4.40
 mm: (3.60...4.80)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1000
 Charge press hPa: 800
 TD travel mm: 1.90...2.70
 mm: (1.60...3.00)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 8th speed 1/min: 800
 Charge press. hPa: 800
 TD travel mm: 1.50...3.50
 mm: (1.30...3.70)
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 9th speed 1/min: 500
 Charge press. hPa: 800
 TD travel mm: 2.10...2.30
 mm: (1.40...3.00)
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

 1st speed 1/min: 1000
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 6.00...6.60
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1500
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 7.30...7.90
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2000
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 8.30...8.90
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Overflow quantity at overflow valve:

 1st speed 1/min: 500
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 62.55...104.25
 quantity cm³/10s: (47.55...119.25)
 2nd speed 1/min: 2250
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 69.50...152.90
 quantity cm³/10s: (54.50...167.90)

 Delivery-quant. and breakaway char.:

 1nd speed 1/min: 1000
 Charge-air pressure-setting
 point hPa: 300
 LDA-stroke mm: 6,5
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 58.50...59.50
 1000S.: (55.50...62.50)

3rd speed 1/min: 2625
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...10.00
 1000S.: (0.00...10.00)
 5th speed 1/min: 2525
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 23.50...25.50
 1000S.: (20.50...28.50)
 9th speed 1/min: 2250
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...74.00
 1000S.: (69.00...75.00)
 12th speed 1/min: 1250
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 66.50...67.50
 1000S.: (64.50...69.50)
 15th speed 1/min: 1000
 Charge press. hPa: 800
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.50...72.50
 1000S.: (67.50...74.50)
 18th speed 1/min: 625
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 29.50...30.50
 1000S.: (27.00...33.00)
 20th speed 1/min: 500
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.50...32.50
 1000S.: (26.00...34.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: --
 KSB/AFB
 valve Volt: 12
 Idle delivery:
 1st speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.00...11.00
 1000S.: (6.00...14.00)
 Dispersion cm³/: 3.0
 1000S.: (4.0)
 2nd speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)

Automatic starting fuel delivery:

2nd speed 1/min: 350
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20.00...40.00
 1000S.: (20.00...40.00)
 4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...100.00
 1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.3
KF	mm: K-OT
MS	mm: 0.6...1.0
SVS max.	mm: -

LDA stroke mm: 6.5
XK mm: 20.0...22.0
XL mm: 10.7...14.1

Remarks:

Overflow restriction 0.75 mm - Part No.
.343,..344

Operate control lever after each
manifold-pressure compensator pressure
change.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2525
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2525
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2525/100
Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2.5 L
Edition : 23.12.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415
Type number : 0 460 414 083
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40
Outlet : 8

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.20...4.60

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 32.20...33.20
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm³/
1000S.: 6.00...8.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm³/
1000S.: 30.50...36.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...90.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20...4.60
mm: (3.90...4.90)
Shutoff
electromagnet Volt: 12

3rd speed	1/min: 800	Shutoff
TD travel	mm: 2.00...2.80	electromagnet Volt: 12
	mm: (1.70...3.10)	Del. quantity cm ³ /: 0.00...5.00
Shutoff		1000s.: (0.00...5.00)
electromagnet Volt: 12		3rd speed 1/min: 2200
4th speed	1/min: 500	Shutoff
TD travel	mm: 2.80...3.00	electromagnet Volt: 12
	mm: (2.50...3.30)	Del. quantity cm ³ /: 23.20...25.20
Shutoff		1000s.: (19.20...29.20)
electromagnet Volt: 12		4th speed 1/min: 2100
Supply-pump pressure characteristic:		Shutoff
1st speed	1/min: 500	electromagnet Volt: 12
Supply-pump pressure	bar: 4.40...5.00	Del. quantity cm ³ /: 30.50...36.50
	bar: (4.20...5.20)	1000s.: (27.50...39.50)
Shutoff		5th speed 1/min: 1700
electromagnet Volt: 12		Shutoff
2nd speed	1/min: 1000	electromagnet Volt: 12
Supply-pump pressure	bar: 5.70...6.30	Del. quantity cm ³ /: 36.50...38.90
	bar: (5.50...6.50)	1000s.: (35.20...40.30)
Shutoff		6th speed 1/min: 1000
electromagnet Volt: 12		Shutoff
3rd speed	1/min: 1250	electromagnet Volt: 12
Supply-pump pressure	bar: 6.20...6.80	Del. quantity cm ³ /: 32.20...33.20
	bar: (6.00...7.00)	1000s.: (30.20...35.20)
Shutoff		7th speed 1/min: 500
electromagnet Volt: 12		Shutoff
4th speed	1/min: 2000	electromagnet Volt: 12
Supply-pump pressure	bar: 7.80...8.40	Del. quantity cm ³ /: 24.00...28.00
	bar: (7.60...8.60)	1000s.: (23.20...29.00)
Shutoff		Mech. shutoff:
electromagnet Volt: 12		Electr. shutoff:
Overflow quantity at overflow valve:		1st speed 1/min: 425
1st speed	1/min: 500	Del. quantity cm ³ /: 0.00...3.00
Shutoff		1000s.: (0.00...3.00)
electromagnet Volt: 12		Shutoff
Overflow	: 97.00...141.00	electromagnet volt: -
quantity cm ³ /10s:	(97.00...141.00)	Idle delivery:
2nd speed	1/min: 1950	1st speed 1/min: 425
Shutoff		Shutoff
electromagnet Volt: 12		electromagnet Volt: 12
Overflow	: 115.00...184.00	Del. quantity cm ³ /: 6.00...8.00
quantity cm ³ /10s:	(115.00...184.00)	1000s.: (3.00...11.00)
Delivery-quant. and breakaway char.:		Dispersion cm ³ /: 3.0
1nd speed	1/min: 1950	1000s.: (4.0)
Shutoff		2nd speed 1/min: 500
electromagnet Volt: 12		Shutoff
Del. quantity cm ³ /: 36.00...38.40		electromagnet Volt: 12
1000s.: (34.70...39.70)		Del. quantity cm ³ /: 2.00...10.00
2nd speed	1/min: 2400	1000s.: (0.00...10.00)
		Part-load del. at 3rd inj.-qty.
		terza ferma della portata
		stop (EGR set)
		scarico) (ARF)
		gaz d'échappement-ARF)

Spacing mm: 20.0
 1st speed 1/min: 1250
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 17.00...20.00
 1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 35.00...65.00
 1000S.: (35.00...65.00)

2nd speed 1/min: 480
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 21.00...31.00
 1000S.: (21.00...31.00)

3rd speed 1/min: 100
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 50.00...90.00
 1000S.: (50.00...90.00)

Shutoff electromagnet:

Cut-in min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 2.7...2.9
KF	mm: KOT
MS	mm: 1.8
XK	mm: -
XL	mm: -

Remarks:
 :
 :

Overflow restriction 0.75 mm - Part No.
..343,..344

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation speed 1/min :2200
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation speed 1/min :2200
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation speed 1/min :2200/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
 Edition : 09.04.92
 replaces : -
 Calibrating oil : ISO-4113
 Injection pump : VE4/11F2100R415-1
 Type number : 0 460 414 085
 Customer Part-No. :

Customer-specific information
 Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 114

Opening
 Pressure bar: 207.00...210.00

Perforated-plate
 diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: -
 (from BDC): -

Start of delivery block
 Piston stroke mm: 0.35
 mm: 0.30...0.40
 Outlet : B

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
 Setting value mm: 4.20...4.60
 Shutoff electromagnet Volt: 12
 Supply-pump pressure
 Speed 1/min: 1250
 Setting value bar: 6.20...6.80
 Shutoff electromagnet Volt: 12
 Full-load del. w/out charge press.:
 Speed 1/min: 500
 Del. quantity cm³/ 1000s.: 25.80...26.20 F
 Shutoff electromagnet Volt: 12
 Low-idle speed regulation
 Speed 1/min: 425
 Del. quantity cm³/ 1000s.: 8.00...9.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/ 1000s.: (4.0)
 Full-load speed regulation
 Speed 1/min: 2200
 Del. quantity cm³/ 1000s.: 23.20...25.20
 Shutoff electromagnet Volt: 12
 Start:
 Speed 1/min: 100
 Del. quantity cm³/ mind 1000s.: 50.00...90.00
 Shutoff electromagnet Volt: 12
 Inspection-pump test specifications
 Test specifications in parentheses
 Timing-device characteristic:
 1st speed 1/min: 2000
 TD travel mm: 7.50...8.30
 mm: (7.20...8.60)
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 TD travel mm: 4.20...4.60
 mm: (3.90...4.90)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 TD travel mm: 2.00...2.80
 mm: (1.70...3.10)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 4.40...5.00
 Shutoff electromagnet Volt: 12
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 5.70...6.30
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1250
 Supply-pump pressure bar: 6.20...6.80
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 2000
 Supply-pump pressure bar: 7.80...8.40
 Shutoff electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff electromagnet Volt: 12
 Overflow : 97.00...141.00
 quantity cm³/10s: (82.00...156.00)
 2nd speed 1/min: 1950
 Shutoff electromagnet Volt: 12
 Overflow : 115.00...184.00
 quantity cm³/10s: (100.00...199.00)
 Delivery-quant. and breakaway char.:
 1nd speed 1/min: 1950
 HBA-stroke mm: 7.7
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 36.0...38.4 D
 1000s.: (34.7...39.7) D
 2nd speed 1/min: 2400
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000s.: (0.00...5.00)
 3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 23.20...25.20
 1000s.: (19.20...29.20)
 4th speed 1/min: 2100
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 30.50...36.50
 1000s.: (27.50...39.50)
 5th speed 1/min: 1700
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 36.50...38.90
 1000s.: (35.20...40.30)
 6th speed 1/min: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 32.2...33.2 E
 1000s.: (30.2...35.2) E
 7th speed 1/min: 500
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 24.00...28.0 F
 1000s.: (23.20...29.0) F
 Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 425
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 425
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 8.00...9.00
 1000s.: (5.00...13.00)
 Dispersion cm³: 3.0
 1000s.: (4.0)
 2nd speed 1/min: 500
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 2.00...10.00
 1000s.: (0.00...12.00)
 Part-load del. at 3rd inj.-qty.
 terza ferma della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 20.0
 1st speed 1/min: 1250
 Shutoff electromagnet Volt: 12

Del. quantity cm³/: 18.00...19.00
1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...70.00
1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 21.00...31.00
1000S.: -

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 45.00...85.00
1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: KOT

MS mm: 1.8

HBA stroke mm: 7.7

XK mm: -

XL mm: -

Remarks:

:

:

Overflow restriction 0.75 mm - Part No.
.343..344

Pump/engine assignment:

Attach timing-device cover KDEP 1151.

Plunger lift in blocking position =

0.30...

0.40 mm referenced to outlet "A".

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2200/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FCR 2,5 K
 Edition : 06.12.91
 replaces : -
 Calibrating oil : ISO 4113

Injection pump : VE4/11F2000R431
 Type number : 0 460 414 086

Customer-specific information
 Customer : FORD

Engine : 2,5 L.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 023

Opening
 Pressure bar: 172.0..175.00

Perforated-plate
 diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: -
 (from BDC): -

Start of delivery block
 Piston stroke mm: 0.78
 mm: 0.73...0.83
 Outlet : B

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
 Setting value mm: 2,5...2,9

Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
 Setting value bar: 5,6...6,2
 Shutoff
 electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 30,5...31,5 F

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
 Del. quantity cm³/
 1000S.: 16,0...20,0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/ : 3,0
 1000S.: (4,0)

Full-load speed regulation

Speed 1/min: 2100
 Del. quantity cm³/
 1000S.: 30,5...34,5

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/ : -
 mind 1000S.: 62,0
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
 TD travel mm: 0,4...1,2
 mm: (0,1...1,5)
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 TD travel mm: 2,5...2,9
 mm: (2,2...3,2)

Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 1950

TD travel	mm: 5,8...6,6 mm: (5,5...6,9)	4th speed 1/min: 2100 Shutoff
Shutoff	electromagnet Volt: 12	electromagnet Volt: 12 Del. quantity cm ³ /: 30,5...34,5 1000s.: (27,5...37,5)
Supply-pump pressure characteristic:		5th speed 1/min: 1700 Shutoff
1st speed	1/min: 500	electromagnet Volt: 12 Del. quantity cm ³ /: 38,7...42,3 1000s.: (38,0...43,0)
Supply-pump pressure	bar: 3,1...3,7	6th speed 1/min: 1000 Shutoff
Shutoff	electromagnet Volt: 12	electromagnet Volt: 12 Del. quantity cm ³ /: 35,5...36,5 E 1000s.: (33,5...38,5)E
2nd speed	1/min: 1000	7th speed 1/min: 500 Shutoff
Supply-pump pressure	bar: 4,8...5,4	electromagnet Volt: 12 Del. quantity cm ³ /: 30,5...31,5 F 1000s.: (28,0...34,0)F
Shutoff	electromagnet Volt: 12	Mech. shutoff:
3rd speed	1/min: 1250	Electr. shutoff:
Supply-pump pressure	bar: 5,6...6,2	1st speed 1/min: 425 Del. quantity cm ³ /: 0,0...3,0 1000s.: -
Shutoff	electromagnet Volt: 12	Shutoff
4th speed	1/min: 1950	electromagnet volt: -
Supply-pump pressure	bar: 7,7...8,3	Idle delivery:
Shutoff	electromagnet Volt: 12	1st speed 1/min: 425 Shutoff
Overflow quantity at overflow valve:		electromagnet Volt: 12 Del. quantity cm ³ /: 16,0...20,0 1000s.: (14,0...22,0)
1st speed	1/min: 500	2nd speed 1/min: 500 Shutoff
Shutoff	electromagnet Volt: 12	electromagnet Volt: 12 Del. quantity cm ³ /: 5,0...13,0 1000s.: (2,0...15,0)
Overflow	: 55,5...100,0	Part-load del.at 3rd inj.-qty. terza fermo della portata
quantity cm ³ /10s:	(40,5...115,0)	stop (EGR set) scarico) (ARF) gaz d'échappement-ARF)
2nd speed	1/min: 1950	Spacing mm: 20,0
Shutoff	electromagnet Volt: 12	1st speed 1/min: 1250 Shutoff
Overflow	: 83,3...152,7	electromagnet Volt: 12 Del. quantity cm ³ /: 23,0...24,0 1000s.: (21,0...26,0)
quantity cm ³ /10s:	(68,3...167,7)	Automatic starting fuel delivery:
Delivery-quant. and breakaway char.:		1st speed 1/min: 300
1nd speed	1/min: 1950	
HBA-stroke	mm: 9,8	
Shutoff	electromagnet Volt: 12	
Del. quantity cm ³ /	37,7...41,3 D	
	1000s.: (37,0...42,0)D	
2nd speed	1/min: 2400	
Shutoff	electromagnet Volt: 12	
Del. quantity cm ³ /	0,0...10,0	
	1000s.: -	
3rd speed	1/min: 2200	
Shutoff	electromagnet Volt: 12	
Del. quantity cm ³ /	18,0...26,0	
	1000s.: (16,0...28,0)	

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30,0...60,0
1000S.: -

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24,0...34,0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: K-OT
MS mm: 1,3...1,7
HBA stroke mm: 9,8

Remarks:

Pump/engine assignment:
Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

F = Adjustment point for low full-load
delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES
Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3.6 Q
Edition : 12.11.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/11F1800L218-6
Type number : 0 460 416 059
Customer Part-No. :

Customer-specific information
Customer : VOLVO-PENTA

Engine : AQAD 41 A

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 688 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3.90...4.30

Supply-pump pressure

Speed 1/min: 1200
Charge press. hPa: 1000

Setting value bar: 6.00...6.60

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 68.00...69.00
Dispersion cm³/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm³/
1000S.: 51.50...52.50

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 15.50...19.50
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 37.00...43.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 85.00...115.00
mind 1000S.: 85.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3.90...4.30
mm: (3.40...4.80)
4th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 0.90...1.70
mm: (0.60...2.00)
5th speed 1/min: 1400
Charge press. hPa: 1000
TD travel mm: 4.50...5.30
mm: (4.20...5.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1800
Charge press. hPa: 1000

Supply-pump pressure	bar: 7.40...8.00 bar: (7.20...8.20)	Del. quantity cm ³ /: 71.50...74.50 1000S.: (70.00...76.00)
2nd speed	1/min: 1200	Mech. shutoff: Mech. Abstellung:
Charge press.	hPa: 1000	
Supply-pump pressure	bar: 6.00...6.60 bar: (5.80...6.80)	1st speed 1/min: 1900 Charge press. hPa: 1000 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00)
3rd speed	1/min: 800	
Charge press.	hPa: 1000	
Supply-pump pressure	bar: 5.00...5.60 bar: (4.80...5.80)	Electr. shutoff: 1st speed 1/min: 350 Charge press. hPa: - Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00)
Overflow quantity at overflow valve:		
1st speed	1/min: 650	Shutoff electromagnet volt: 12
Charge press.	hPa: -	
Overflow	: 41.70...83.40	Idle delivery:
quantity cm ³ /10s:	(26.70...98.40)	1st speed 1/min: 350 Del. quantity cm ³ /: 15.50...19.50 1000S.: (12.50...22.50)
2nd speed	1/min: 1800	Dispersion cm ³ /: 3.5 1000S.: (3.5)
Charge press.	hPa: 1000	2nd speed 1/min: 450 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00)
Overflow	: 55.60...139.00	3rd speed 1/min: 400 Del. quantity cm ³ /: 3.00...9.00 1000S.: (1.50...10.50)
quantity cm ³ /10s:	(40.60...153.00)	
Delivery-quant. and breakaway char.:		
1nd speed	1/min: 800*	Automatic starting fuel delivery:
Charge-air pressure-setting point	hPa: 260	1st speed 1/min: 300 Del. quantity cm ³ /: 85.00...115.00 1000S.: (85.00...115.00)
LDA-stroke	mm: 4.7	2nd speed 1/min: 500 Del. quantity cm ³ /: 55.00...85.00 1000S.: (55.00...85.00)
Del. quantity cm ³ /:	59.50...60.50 1000S.: (57.00...63.00)	4th speed 1/min: 100 Del. quantity cm ³ /: 85.00...115.00 1000S.: (85.00...115.00)
2nd speed	1/min: 2130	
Charge press.	hPa: 1000	Shutoff electromagnet:
Del. quantity cm ³ /:	0.00...3.00 1000S.: (0.00...3.00)	Cut-in min voltage : 10.0 Rated voltage : 12.0
3rd speed	1/min: 2050	
Charge press.	hPa: 1000	Mounting and assembly dimensions:
Del. quantity cm ³ /:	3.00...13.00 1000S.: (3.00...13.00)	Designation K mm: - KF mm: KOT MS mm: 1.1...1.5
5th speed	1/min: 2000	
Charge press.	hPa: 1000	
Del. quantity cm ³ /:	37.00...43.00 1000S.: (36.00...44.00)	
9th speed	1/min: 1800	
Charge press.	hPa: 1000	
Del. quantity cm ³ /:	65.50...68.50 1000S.: (63.50...70.50)	
12th speed	1/min: 1500	
Charge press.	hPa: 1000	
Del. quynity cm ³ /:	68.00...69.00 1000S.: (66.20...70.80)	
18th speed	1/min: 650	
Del. quantity cm ³ /:	51.50...52.50 1000S.: (49.00...55.00)	
20th speed	1/min: 800	
Charge press.	hPa: 1000	

LDA stroke mm: 4.7

Remarks:

:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2000
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2000
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2000/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 42
 Edition : 21.09.92
 Replaces : 03.91
 Test oil : ISO-4113

Combination no. : 0 400 464 135

Injection pump
 Pump designation : PES4A80D410/3RS1300
 EP type number : 0 410 484 015
 Governor
 Governor design. : RSV325...1150A8C657-
 4L
 Governor no. : 0 420 232 522

Customer-spec. information
 Customer : KHD

Engine : F4L912

1st version kW : 51.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 5.9...6.0

100 s: (5.8...6.2)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.6)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 59.5...60.5

1000 : (58.0...62.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 9.50

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1420
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.50...10.60
2nd speed rpm : 500
Rack travel in m: 10.80...10.90
3rd speed rpm : 880
Rack travel in m: 10.60...10.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm³/ 1000 s: 54.0...56.0
1000 s: (52.0...58.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:
: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 640 101AB
 Injection pump
 Pump designation : PE12A95D610LS2453
 EP type number : 0 410 690 998
 Governor
 Governor design. : RQV300...1150AB1056D
 Governer no. : 0 420 214 245
 Customer-spec. information
 Customer : KHD
 Engine : BF12L413FW
 1st version kW : 240.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.60...9.70

Del.quantity cm³/ : 8.1...8.3

100 s: (7.9...8.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 81.0...83.0

1000 : (79.0...85.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 8.60

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

LOW IDLE 1
Control lever position degrees: 10...18

On activation of the starting solenoid, the start position must be reached.

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 310...380

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.60...9.70
2nd speed rpm : 775
Rack travel in m: 10.00...10.10
3rd speed rpm : 930
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 775
Del.quantity cm³/ 1000 s: 85.5...88.5
1000 s: (83.0...91.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.60
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 640 101AC
 Injection pump
 Pump designation : PE12A95D610LS2453
 EP type number : 0 410 690 998
 Governor
 Governor design. : RQV300...1150AB1056D
 Governor no. : 0 420 214 245
 Customer-spec. information
 Customer : KHD
 Engine : BF12L413FW
 1st version kW : 208.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.90...9.00

Del.quantity cm³/

100 s: (7.1...7.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/

100 s: (0.8...1.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 73.0...75.0

1000 : (71.0...77.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 7.90

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

LOW IDLE 1
Control lever
position degrees: 10...18

On activation of the starting solenoid,
the start position must be reached.

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 310...380

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.90...9.00
2nd speed rpm : 775
Rack travel in m: 9.30...9.40
3rd speed rpm : 930
Rack travel in m: 9.10...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 775
Del.quantity cm³/ : 77.5...80.5
1000 s: (75.0...83.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 7.90
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 640 101AD
 Injection pump
 Pump designation : PE12A95D610LS2453
 EP type number : 0 410 690 998
 Governor
 Governor design. : RQV300...1150AB1056D
 Governor no. : 0 420 214 245
 Customer-spec. information
 Customer : KHD
 Engine : BF12L413FW
 1st version kW : 177.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test Lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315
 Tolerance + - * : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 8.10...8.20
 Del.quantity cm³/ : 6.5...6.7
 100 s: (6.3...6.9)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.4...6.6
 Del.quantity cm³/ : 1.1...1.7
 100 s: (0.8...1.9)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 700
 Del.quantity : 65.0...67.0
 1000 : (63.0...69.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 62...70

Testing:
 1st rack travel in: 7.10
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

LOW IDLE 1
Control lever position degrees: 10...18

On activation of the starting solenoid, the start position must be reached.

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 310...380

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.10...8.20
2nd speed rpm : 775
Rack travel in m: 8.50...8.60
3rd speed rpm : 930
Rack travel in m: 8.30...8.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 775
Del.quantity cm³/ : 68.5...71.5
1000 s: (66.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 7.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 8,7 c 3
 Edition : 21.09.92
 Replaces : 7.85
 Test oil : ISO-4113

Combination no. : 0 400 646 151

Injection pump
 Pump designation : PE6A90D410RS2124X
 EP type number : 0 410 696 155
 Governor
 Governor design. : RQ300/1275AB658DL
 Governor no. : 0 420 202 196

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 360

1st version kW : 125.0
 Rated speed : 2550

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.30...9.40

Del.quantity cm³/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 77.0...78.0

1000 : (75.0...80.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 8.30

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1345...1375

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 350...390
Speed rpm : 475
Maximum rack trave: 1.00

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 9.30...9.40
2nd speed rpm : 500
Rack travel in m: 10.10...10.20
3rd speed rpm : 850
Rack travel in m: 9.80...10.00
4th speed rpm : 1040
Rack travel in m: 9.40...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ 1000 s: 72.5...75.5
1000 s: (67.0...74.0)
Speed rpm : 800
Del.quantity cm³/ 1000 s: 77.0...80.0
1000 s: (75.0...82.0)

RACK STOP ADJUSTMENT

Speed rpm : 450

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.30
Speed rpm : 1295...1310

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 648 118AA

Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RQV750AB1041L
 Governer no. : 0 420 212 109

Customer-spec. information

Customer : KHD

Engine : F8L413F

1st version kW : 129.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 102.0...104.0

1000 : (100.0...106.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.60

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 648 118AB

Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RQV750AB1041L
 Governor no. : 0 420 212 109

Customer-spec. information

Customer : KHD

Engine : F8L413F

1st version kW : 122.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 102.0...104.0

1000 : (100.0...106.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.60

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 648 118AC

Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RQV750AB1041L
 Governor no. : 0 420 212 109

Customer-spec. information

Customer : KHD

Engine : F8I.413F

1st version kW : 103.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 10.00...10.10

Del.quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 648 118AD

Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RQV750AB1041L
 Governer no. : 0 420 212 109

Customer-spec. information
 Customer : KHD

Engine : F8L413F

1st version kW : 95.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 9.50...9.60

Del.quantity cm³/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.50

Speed rpm : 750...755

2nd rack travel in: 4.50

Speed rpm : 779...789

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.50

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : --
 Test oil : ISO-4113

Combination no. : 0 400 648 122AC

Injection pump
 Pump designation : PE8A95D410LS2451
 EP type number : 0 410 698 992
 Governor
 Governor design. : RQ300/1150AB1074L
 Governer no. : 0 420 200 066

Customer-spec. information

Customer : KHD

Engine : F8L413F
 1st version kW : 147.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.4...2.4

100 s: (1.1...2.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 8.70

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1325
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 350...390
Speed rpm : 450
Maximum rack trave: 1.00

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 649 196AA

Injection pump
 Pump designation : PE10A95D610/4LS2452
 EP type number : 0 410 699 998
 Governor
 Governor design. : RQV750AB996L
 Governor no. : 0 420 212 091

Customer-spec. information
 Customer : KHD

Engine : F10L413F

1st version kW : 134.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
 216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 0.6...1.6

100 s: (0.3...1.8)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 755
 travel mm : 5.20...5.40

2nd speed rpm : 785
 travel mm : 7.40...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Del.quantity : 90.0...92.0
 1000 : (88.0...94.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : ?

Rack travel in mm : ?

Testing:

1st rack travel in: 9.20

Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 773...788

START CUT-OUT

Speed 1/min : 660 (680)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Compressor

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 649 196AB

Injection pump
 Pump designation : PE10A95D610/4LS2452
 EP type number : 0 410 699 998
 Governor
 Governor design. : RQV750AB996L
 Governer no. : 0 420 212 091

Customer-spec. information
 Customer : KHD

Engine : F10L413F

1st version kW : 129.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
 216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.90...10.00

Del.quantity cm³/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...5.1

Del.quantity cm³/ : 0.6...1.6

100 s: (0.3...1.8)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 755
 travel mm : 5.20...5.40

2nd speed rpm : 785
 travel mm : 7.40...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Del.quantity : 82.0...84.0
 1000 : (80.0...86.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.90

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 773...788

START CUT-OUT

Speed 1/min : 660 (680)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Compressor

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 649 196AC

Injection pump
 Pump designation : PE10A95D610/4LS2452
 EP type number : 0 410 699 998
 Governor
 Governor design. : RQV750AB996L
 Governer no. : 0 420 212 091

Customer-spec. information

Customer : KHD

Engine : F10L413F

1st version kW : 125.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
 216-243-288-315

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 0.6...1.6

100 s: (0.3...1.8)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 755
 travel mm : 5.20...5.40

2nd speed rpm : 785
 travel mm : 7.40...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Del.quantity : 78.0...80.0
 1000 : (76.0...82.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.70
 Speed rpm : 750...755

2nd rack travel in: 4.00
 Speed rpm : 773...788

START CUT-OUT

Speed 1/min : 660 (680)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Compressor

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 7,2 b 3
 Edition : 21.09.92
 Replaces : 11.89
 Test oil : ISO-4113

Combination no. : 0 400 674 047

Injection pump
 Pump designation : PE4A95D420RS2662-1
 EP type number : 0 410 694 994
 Governor
 Governor design. : RSV350...1100A8C2222
 -1R
 Governor no. : 0 420 233 251

Customer-spec. information
 Customer : HANOMAG

Engine : D244T-50E

1st version kW : 105.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1170...1200

3rd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 13.10...13.20
3rd speed rpm : 910
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ 1000 s: 130.5...133.5
1000 s: (128.0...136.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 125.0...135.0
1000 s: (122.0...138.0)
Rack travel in mm : 19.50...21.00

Remarks:
:

APPLICATION

Wheel Loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 l
 Edition : 21.09.92
 Replaces : 04.89
 Test oil : ISO-4113

Combination no. : 0 400 676 190

Injection pump
 Pump designation : PE6A95D320RS2557-1R
 EP type number : 0 410 696 980
 Governor
 Governor design. : RSV350...1100A8C2217
 -1R
 Governor no. : 0 420 233 220.

Customer-spec. information
 Customer : HANOMAG

Engine : D964 T/60E

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 9.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1170...1200

3rd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1360
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 11.50...11.60
3rd speed rpm : 905
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 91.0...94.0
1000 s: (88.5...96.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 678 040AJ
 Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RSV300...1325A8C1002
 Governer no. : 0 420 232 310
 Customer-spec. information
 Customer : KHD
 Engine : F8L413F
 1st version kW : 173.0
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27
 Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1-8-7-2-6-5-4-3

Phasing : 0-45-90-135-180-225-270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.00...10.10

Del.quantity cm³/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 9.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1575

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 310...370

Speed rpm : 700

Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.00...10.10

2nd speed rpm : 650

Rack travel in m: 10.60...10.70

3rd speed rpm : 850

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm³/ : 93.0...97.0

1000 s: (90.5...99.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Del.quantity cm³/ : 119.0...130.0

1000 s: (116.0...133.0)

Rack travel in mm : 14.00...14.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 9
 Edition : 21.09.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 400 836 041

Injection pump
 Pump designation : PES6A100D320/3RS2691
 -2

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1100AB1227-
 1R

Governor no. : 0 420 213 113

Customer-spec. information

Customer : CBC

Engine : 6 CT 8.3

1st version kW : 157.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 12.6...12.8

100 s: (12.4...13.1)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.8...2.2
 100 s: (1.5...2.4)

Spread cm³ : 0.6

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.30

2nd speed rpm : 460
 travel mm : 1.60...2.10

3rd speed rpm : 510
 travel mm : 2.00...2.50

4th speed rpm : 630
 travel mm : 2.70...3.20

5th speed rpm : 1150
 travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Aneroid pressure h: 900
Del.quantity : 126.5...128.5
1000 : (124.0...131.0)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control Lever
position degrees: 112...120

Testing:
1st rack travel in: 11.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 60...68
Speed rpm : 350
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 500
Rack travel in m: 12.60...12.70

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 405
Rack travel in m: 10.90...11.00
3rd pressure hPa : 535
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 260 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 79.0...83.0
1000 s: (76.5...85.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...185.0
1000 s: (162.0...188.0)
Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

:
Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 g 2
 Edition : 21.09.92
 Replaces : 3.85
 Test oil : ISO-4113

Combination no. : 0 400 894 047

Injection pump
 Pump designation : PES4A90D410RS2294
 EP type number : 0 410 894 011
 Governor
 Governor design. : RQV300...1425AB740L
 Governer no. : 0 420 212 037

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 62.5
 Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 581 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 6.2...6.3

100 s: (6.0...6.5)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 62.5...63.5

1000 : (60.5...65.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 8.70
Speed rpm : 1455...1465
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack travel: 9.10
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION
Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 13.70...14.30

Remarks:

:

APPLICATION

Unimog

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 11
 Edition : 21.09.92
 Replaces : 04.89
 Test oil : ISO-4113

Combination no. : 0 400 844 091

Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-
 12L
 Governor no. : 0 420 212 207

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 61.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del.quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 59.0...60.0

1000 : (57.0...62.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.50

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

LOW IDLE 1
Control lever
position degrees: 20...28

Testing:

Speed rpm : 100
Minimum rack trav: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 540...680

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.50...10.60
2nd speed rpm : 475
Rack travel in m: 11.50...11.60
3rd speed rpm : 850
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 475
Del.quantity cm³/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 850
Del.quantity cm³/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 845 050AA

Injection pump
 Pump designation : PES5A95D410RS2417
 EP type number : 0 410 895 993
 Governor
 Governor design. : RQ750AB1240L
 Governor no. : 0 420 200 110

Customer-spec. information

Customer : KHD

Engine : F5L413FR

1st version kW : 70.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 193

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.10

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.00...14.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 845 050AB

Injection pump
 Pump designation : PES5A95D410RS2417
 EP type number : 0 410 895 993
 Governor
 Governor design. : RQ750AB1240L
 Governor no. : 0 420 200 110

Customer-spec. information
 Customer : KHD

Engine : F5L413FR

1st version kW : 68.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.80...9.90

Del.quantity cm³/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.80

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Det. quantity cm³/ : 120.0...130.0
 1000 s: (117.0...133.0)
Rack travel in mm : 14.00...14.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 845 050AC

Injection pump
 Pump designation : PES5A95D410RS2417
 EP type number : 0 410 895 993
 Governor
 Governor design. : RQ750AB1240L
 Governer no. : 0 420 200 110

Customer-spec. information
 Customer : KHD

Engine : F5L413FR

1st version kW : 64.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 099

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.40...9.50

Del.quantity cm³/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.00...14.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 845 051AA

Injection pump
 Pump designation : PES5A95D410RS2417
 EP type number : 0 410 895 993
 Governor
 Governor design. : RG900AB1054L
 Governer no. : 0 420 200 064

Customer-spec. information

Customer : KHD

Engine : F5L413FR

1st version kW : 78.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 9.40...9.50

Del.quantity cm³/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.40

Speed rpm : 900...905

2nd rack travel in: 3.50

Speed rpm : 930...940

START CUT-OUT

Speed 1/min : 810 (830)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 13.20...13.80

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 432AA

Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RQ750AB1240L
 Governor no. : 0 420 200 110

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 92.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x-600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 432AB

Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RQ750AB1240L
 Governor no. : 0 420 200 110

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 89.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x-600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
 1000 s: (117.0...133.0)
Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 432AC

Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RQ750AB1240L
 Governer no. : 0 420 200 110

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 82.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x-600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.80...9.90

Del.quantity cm³/

100 s: (8.9...9.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.80

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 u 6
 Edition : 21.09.92
 Replaces : 11.84
 Test oil : ISO-4113

Combination no. : 0 400 846 492

Injection pump
 Pump designation : PES6A90D410RS2569
 EP type number : 0 410 896 071
 Governor
 Governor design. : RQV300...1400AB1111-
 2L
 Governor no. : 0 420 212 156

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 88.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400 •

Rack travel in mm : 9.80...9.90

Del.quantity cm³/ : 5.4...5.5

100 s: (5.2...5.7)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 54.5...55.5

1000 : (52.5...57.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.80

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1530...1560

4th rack travel in: 1630

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 100
Minimum rack trave: 9.80
Speed rpm : 300
Rack travel in mm : 8.20...8.40
Rack travel in nm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st. version
1st speed rpm : 1400
Rack travel in m: 9.80...9.90
2nd speed rpm : 500
Rack travel in m: 10.80...10.90
3rd speed rpm : 630
Rack travel in m: 10.60...10.80
4th speed rpm : 1000
Rack travel in m: 10.00...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ 1000 s: 46.5...49.5
1000 s: (44.5...51.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.80
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 73.0...83.0
1000 s: (70.0...86.0)
Rack travel in nm : 14.80...15.20

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 10
 Edition : 21.09.92
 Replaces : 05.89
 Test oil : ISO-4113

 Combination no. : 0 400 846 493

 Injection pump
 Pump designation : PES6A90D410RS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RQV300...1400AB1120-
 1L
 Governor no. : 0 420 212 157

 Customer-spec. information
 Customer : DAIMLER-BENZ

 Engine : OM352A

 1st version kW : 124.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 419 992 198

 Inlet press., bar : 1.50

 Test nozzle holder assembly : 0 681 343 009

 Opening pressure, bar : 172...175

 Test lines : 1 680 750 014

 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 7.3...7.4

100 s: (7.1...7.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del.quantity : 73.0...74.0

1000 : (71.5...76.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 10.90

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1570...1600

4th rack travel in: 1750

Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:

Speed rpm : 100
Minimum rack trave: 10.10
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION

Speed rpm : 590...660

TORQUE CONTROL

Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.90...12.00
2nd speed rpm : 500
Rack travel in m: 13.00...13.10
3rd speed rpm : 1000
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.10...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 320
Rack travel in m: 12.70...12.80
3rd pressure hPa : 220
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 67.5...69.5
1000 s: (65.5...71.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 56.0...58.0
1000 s: (54.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 72.0...82.0
1000 s: (69.0...85.0)
Rack travel in mm : 14.90...15.30

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 p
 Edition : 21.09.92
 Replaces : 7.86
 Test oil : ISO-4113

Combination no. : 0 400 846 534

Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RQ750AB1199L
 Governer no. : 0 420 200 098

Customer-spec. information
 Customer : KHD

Engine : F6L413FRT

1st version kW : 112.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

M07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 127.5...129.5

1000 : (125.5...131.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.60

Speed rpm : 750...755

2nd rack travel in: 3.50

Speed rpm : 781...791

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Det.quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)
Rack travel in mm : 13.20...13.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 534AA

Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RQ750AB1199L
 Governer no. : 0 420 200 098

Customer-spec. information

Customer : KHD

Engine : BF6L413FRT

1st version kW : 99.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.90

Speed rpm : 750...755

2nd rack travel in: 3.50

Speed rpm : 780...790

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
 1000 s: (117.0...133.0)
Rack travel in mm : 13.20...13.40

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 1
 Edition : 21.09.92
 Replaces : 08.90
 Test oil : ISO-4113

Combination no. : 0 400 846 537

Injection pump
 Pump designation : PES6A95D320RS2693Z
 EP type number : 0 410 896 913
 Governor
 Governor design. : RQ300/1300AB1204R
 Governor no. : 0 420 201 640

Customer-spec. information
 Customer : DAF

Engine : DNS 620

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del.quantity cm³/

100 s: (8.5...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.60...6.60
Rack travel in mm : 2.00
Speed rpm : 540...580

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 11.60...11.80
2nd speed rpm : 850
Rack travel in m: 13.00...13.40
3rd speed rpm : 935
Rack travel in m: 12.60...13.00
4th speed rpm : 1080
Rack travel in m: 11.90...12.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.10
2nd pressure hPa : 290
Rack travel in m: 11.80...11.90
3rd pressure hPa : 265
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm³/ : 88.0...90.0
1000 s: (85.5...92.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 65.5...66.5
1000 s: (63.5...68.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 P 2
 Edition : 21.09.92
 Replaces : 08.90
 Test oil : ISO-4113

Combination no. : 0 400 846 538

Injection pump
 Pump designation : PES6A95D320RS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RQ300/1300AB1204R
 Governer no. : 0 420 201 640

Customer-spec. information
 Customer : DAF

Engine : DNT 620

1st version kW : 130.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.70
Speed rpm : 1350...1365
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 540...580

TORQUE CONTROL
Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.60...10.80
2nd speed rpm : 850
Rack travel in m: 12.00...12.40
3rd speed rpm : 935
Rack travel in m: 11.60...12.00
4th speed rpm : 1080
Rack travel in m: 10.90...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.10...11.30
2nd pressure hPa : 250
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm³/ : 74.0...76.0
1000 s: (71.5...78.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 65.5...66.5
1000 s: (63.5...68.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1350...1365

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 p
 Edition : 21.09.92
 Replaces : 12.87
 Test oil : ISO-4113

Combination no. : 0 400 846 549

Injection pump
 Pump designation : PES6A95D410RS2471
 EP type number : 0 410 896 952
 Governor
 Governor design. : RQV300...1250AB1089-
 2L
 Governer no. : 0 420 212 190

Customer-spec. information
 Customer : KHD

Engine : BF6L913C

1st version kW : 141.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.30...1.40

2nd speed rpm : 650

travel mm : 3.70...3.90

3rd speed rpm : 1200

travel mm : 6.90...7.10

4th speed rpm : 1290

travel mm : 8.40...8.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 10.60
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION
Speed rpm : 350...485

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.60...11.70
2nd speed rpm : 500
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 850
Del.quantity cm³/ 1000 s: 95.5...98.5
1000 s: (93.0...101.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1290...1300

Remarks:
:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 d
 Edition : 21.09.92
 Replaces : 09.86
 Test oil : ISO-4113

Combination no. : 0 400 846 559

Injection pump
 Pump designation : PES6A90D410RS2710
 EP type number : 0 410 896 082
 Governor
 Governor design. : RQV300...1400AB1065-
 9L
 Governor no. : 0 420 212 202

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 92.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.7...8.9

Del.quantity cm³/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 59.0...60.0

1000 : (57.0...62.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 9.30
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:
Speed rpm : 100
Minimum rack trave: 10.30
Soeed rpm : 300
Rack travel in mm : 8.70...8.90

CONSTANT REGULATION
Speed rpm : 530...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 11.30...11.40
3rd speed rpm : 750
Rack travel in m: 11.00...11.20
4th speed rpm : 1100
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 850
Del.quantity cm³/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.30
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 a 4
 Edition : 21.09.92
 Replaces : 04.87
 Test oil : ISO-4113

Combination no. : 0 400 846 563

Injection pump
 Pump designation : PES6A90D410RS2667
 EP type number : 0 410 896 080
 Governor
 Governor design. : RQV300...1200AB1065-
 15L
 Governor no. : 0 420 212 210

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 92.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 5.8...5.9
 100 s: (5.6...6.1)

Spread cm³ : 0.3
 100 s: (0.5)

2nd speed rpm : 300.0
 Rack travel in mm : 8.9...9.1
 Del.quantity cm³/ : 0.9...1.3
 100 s: (0.7...1.5)
 Spread cm³ : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.30...4.70
 4th speed rpm : 1260
 travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1260
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del.quantity : 58.0...59.0
 1000 : (56.0...61.0)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.10
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack trave: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.10...11.20
2nd speed rpm : 600
Rack travel in m: 12.30...12.40
3rd speed rpm : 900
Rack travel in m: 11.80...12.00
4th speed rpm : 1000
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 54.0...56.0
1000 s: (51.5...58.5)
Speed rpm : 900
Del.quantity cm³/ : 56.0...59.0
1000 s: (53.5...61.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j
 Edition : 21.09.92
 Replaces : 11.90
 Test oil : ISO-4113
 Combination no. : D 400 846 584
 Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RQV300...1400AB1065-
 20L
 Governor no. : 0 420 212 225
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM 366
 1st version kW : 97.0
 Rated speed : 2800
TEST BENCH REQUIREMENTS
 Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test Lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600
(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____
BEGINNING OF DELIVERY
 Test pressure, bar: 25...27
 Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.30...9.40

Del.quantity cm³/ : 6.6...6.8

100 s: (6.4...7.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 66.0...68.0

1000 : (64.0...70.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 13.70...14.10

Testing:
1st rack travel in: 8.30
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1670
Speed rpm : 0.00...1.00

Remarks:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 100
Minimum rack trave: 9.50
Speed rpm : 300
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION
Speed rpm : 450...580

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.30...9.40
2nd speed rpm : 500
Rack travel in m: 10.30...10.60
3rd speed rpm : 900
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 53.0...56.0
1000 s: (50.5...58.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.30
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 21.09.92
 Replaces : 04.92
 Test oil : ISO-4113
 Combination no. : 0 400 846 609
 Injection pump
 Pump designation : PES6A95D320RS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1350AB1248-
 3R
 Governor no. : 0 420 213 128
 Customer-spec. information
 Customer : NAVISTAR
 Engine : DTA-360
 1st version kW : 127.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038
 Inlet press., bar : 2.80
 Test nozzle holder assembly : 1 688 901 110
 Opening pressure, bar : 250...253
 Orifice plate diameter mm : 0,5
 Test Lines : 1 680 750 008
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1350
travel mm		: 7.30...7.50
2nd speed	rpm	: 1460
travel mm		: 8.10...8.50
3rd speed	rpm	: 550
travel mm		: 3.10...3.70
4th speed	rpm	: 350
travel mm		: 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed	rpm	: 1350
Aneroid pressure h:	900	
Del.quantity		: 73.5...75.5
1000		: (71.5...77.5)
Spread	cm ³	: 3.50
1000		: (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Testing:
1st rack travel in: 10.60
Speed rpm : 1405...1425
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 350
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 200
Rack travel in m: 10.10...10.20
3rd pressure hPa : 380
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...65.0
1000 s: (59.0...67.0)

BREAKAWAY

M24

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1405...1425

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks: : NAVISTAR #1819884C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 610

Injection pump
 Pump designation : PES6A95D320RS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1200AB1236-10R
 Governor no. : 0 420 213 130

Customer-spec. information
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder assembly : 1 688 901 110

Opening pressure, bar : 250...253

Orifice plate diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.80...12.90

Del.quantity cm³/

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1400
	travel mm	: 8.60...9.00
2nd speed	rpm	: 1250
	travel mm	: 7.30...7.50
3rd speed	rpm	: 550
	travel mm	: 3.10...3.70
4th speed	rpm	: 350
	travel mm	: 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed	rpm	: 1200
Aneroid pressure h:	900	
Del.quantity		: 92.0...94.0
	1000	: (90.0...96.0)
Spread	cm ³	: 3.50
	1000	: (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.80
Speed rpm : 1245...1275
2nd rack travel in: 4.00
Speed rpm : 1385...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 310
Rack travel in m: 10.00...10.10
3rd pressure hPa : 540
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 61.5...65.5
1000 s: (59.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1245...1275

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (11.0...175.0)
Rack travel in mm : 20.0...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks: : NAVISTAR #1819887C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 511

Injection pump
 Pump designation : PES6A95D320RS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1200AB1236-
 9R
 Governor no. : 0 420 213 129

Customer-spec. information
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.80...12.90

Del.quantity cm³/

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1400
	travel mm	: 8.60...9.00
2nd speed	rpm	: 1250
	travel mm	: 7.30...7.50
3rd speed	rpm	: 550
	travel mm	: 3.10...3.70
4th speed	rpm	: 350
	travel mm	: 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed	rpm	: 1200
Aneroid pressure h:	900	
Del.quantity		: 92.0...94.0
	1000	: (90.0...96.0)
Spread	cm ³	: 3.50
	1000	: (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:
1st rack travel in: 11.80
Speed rpm : 1240...1270
2nd rack travel in: 4.00
Speed rpm : 1385...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 215
Rack travel in m: 10.20...10.30
3rd pressure hPa : 460
Rack travel in m: 11.70...12.10

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.5...68.5
1000 s: (62.5...70.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks: : NAVISTAR #1819885091

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 e 7
 Edition : 25.09.92
 Replaces : 06.88
 Test oil : ISO-4113
 Combination no. : 0 400 866 123
 Injection pump
 Pump designation : PES6A90D320/3RS2660
 EP type number : 0 410 896 078
 Governor
 Governor design. : RSV325...1200AOC2182
 -4R
 Governer no. : 0 420 233 213
 Customer-spec. information
 Customer : MWM
 Engine : TD226B-6
 1st version kW : 107.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference * CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm³/

100 s: (7.5...8.0)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.0...7.2

Del.quantity cm³/

100 s: (0.8...1.8)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 94...102

Testing:

1st rack travel in: 9.20
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1265...1295
3rd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1455
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.20...10.30
2nd speed rpm : 700
Rack travel in m: 11.00...11.10
4th speed rpm : 1010
Rack travel in m: 10.50...10.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 210
Rack travel in m: 10.80...10.90
3rd pressure hPa : 140
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ 1000 s: 77.0...79.0
1000 s: (74.5...81.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ 1000 s: 61.0...62.0
1000 s: (58.0...64.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.20
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 128.0...138.0
1000 s: (125.0...141.0)
Rack travel in mm : 19.50...21.00

Remarks:
:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 866 154MA

Injection pump
 Pump designation : PES6A100D320/3RS2691
 -4

EP type number : 9 410 230 030
 Governor
 Governor design. : RSV450...1100AOC2241
 -R
 Governor no. : 0 420 233 256

Cust. part no. : 3923479

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-830

1st version kW : 157.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever
position degrees: 43...51

Testing:

1st rack travel in: 11.70
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1235...1245
3rd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 550
Rack travel in mm : 5.50...5.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 340
Rack travel in m: 11.30...11.40
3rd pressure hPa : 465
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 80.0...82.0
1000 s: (78.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 866 178

Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV550...1100AOC2190
 -56R
 Governer no. : 0 420 233 295

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-830

1st version kW : 157.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

N05

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/

100 s: (12.1...12.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/

100 s: (1.3...2.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.70
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 550
Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: C.D.C. # 3923480

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 g 4
 Edition : 21.09.92
 Replaces : 9.85
 Test oil : ISO-4113

Combination no. : 0 400 874 218

Injection pump
 Pump designation : PES4A90D410RS2294
 EP type number : 0 410 894 011
 Governor
 Governor design. : RSV350...1400AOC2006
 Governer no. : 0 420 232 395

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 62.5
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 9.2...9.4

Del.quantity cm³/ : 2.4...3.0

100 s: (2.2...3.2)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1380

Del.quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 9.40

Speed rpm : 1420...1430

2nd rack travel in: 4.40

Speed rpm : 1490...1505

4th rack travel in: 1600

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 9.20...9.40
Rack travel in mm : 2.00
Speed rpm : 530...590
Speed rpm : 650
Maximum rack trave: 1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 14.70...15.30

LOW IDLE

Speed rpm : 350
Rack travel in mm : 9.20...9.40
Del.quantity cm³/ : 24.0...30.0
1000 s: (22.0...32.0)
Spread cm³ : 2.00
1000 s: (4.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 n 14
 Edition : 21.09.92
 Replaces : 10.85
 Test oil : ISO-4113

Combination no. : 0 400 874 227

Injection pump
 Pump designation : PES4A90D410RS2570
 EP type number : 0 410 894 023
 Governor
 Governor design. : RSV350...1200A2C1139
 -1L
 Governer no. : 0 420 232 401

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 48.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 4.9...5.0

100 s: (4.7...5.2)

Spread cm³ : 0.3

100 s: (0.2)

2nd speed rpm : 350.0

Rack travel in mm : 8.9...9.5

Del.quantity cm³/ : 1.1...1.3

100 s: (0.9...1.5)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 49.5...50.5

1000 : (47.5...52.5)

Spread cm³ : 3.00

1000 : (2.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 9.40

Speed rpm : 1235...1240

2nd rack travel in: 4.00

Speed rpm : 1293...1306

3rd rack travel in: 4.00

Speed rpm : 1345...1375
4th rack travel in: 1450
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 9.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 9.10...9.30
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 11.80...12.00
3rd speed rpm : 900
Rack travel in m: 11.10...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 45.0...47.0
1000 s: (42.5...49.5)
Spread cm³ : -
1000 s: (5.00)
Speed rpm : 900
Del.quantity cm³/ : 49.0...51.0
1000 s: (46.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1235...1240

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.90...9.50
Del.quantity cm³/ : 11.0...13.0
1000 s: (9.0...15.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 n 13
 Edition : 21.09.92
 Replaces : 10.85
 Test oil : ISO-4113

Combination no. : 0 400 874 237

Injection pump
 Pump designation : PES4A90D410RS2570
 EP type number : 0 410 894 023
 Governor
 Governor design. : RSV350...1300A2C1126
 -2L
 Governor no. : 0 420 232 403

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 314

1st version kW : 55.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 6.0...6.1

100 s: (5.8...6.3)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 8.4...9.0

Del.quantity cm³/ : 1.1...1.3

100 s: (0.9...1.5)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 60.0...61.0

1000 : (58.0...63.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 9.90

Speed rpm : 1340...1345

2nd rack travel in: 4.00

Speed rpm : 1386...1399

3rd rack travel in: 4.00

Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.30...1.40

Del.quantity cm³/ : 11.0...13.0
1000 s: (9.0...15.0)
Spread cm³ : 2.50
1000 s: (4.50)

LOW IDLE 1
Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.7

Remarks:

:

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 8.60...8.80
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 11.60...11.80
3rd speed rpm : 700
Rack travel in m: 11.20...11.50

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 48.0...52.0
1000 s: (45.5...54.5)
Spread cm³ : -
1000 s: (5.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1340...1345

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.50...16.90

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.40...9.00

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 b
 Edition : 21.09.92
 Replaces : 02.88
 Test oil : ISO-4113

Combination no. : 0 400 874 240

Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RSV350...1400AOC2006
 -1L
 Governer no. : 0 420 232 449

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.40...10.50

Del.quantity cm³/

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.0

Del.quantity cm³/

100 s: (0.4...1.2)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1380

Del.quantity : 63.0...64.0

1000 : (61.0...66.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Testing:

1st rack travel in: 9.40

Speed rpm : 1430...1440

2nd rack travel in: 4.00

Speed rpm : 1480...1510

4th rack travel in: 1575

Speed rpm : 0.30...1.70
LOW IDLE 1
Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.9

Del.quantity cm³/ : 6.0...10.0
1000 s: (4.0...12.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 7.80...8.00
Rack travel in mm : 2.00
Speed rpm : 445...505

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1380
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 11.70...11.80
3rd speed rpm : 900
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 52.0...54.0
1000 s: (49.5...56.5)
Spread cm³ : -
1000 s: (5.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 1430...1440

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.30...16.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.80...8.00

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 e 2
 Edition : 21.09.92
 Replaces : 12.90
 Test oil : ISO-4113

Combination no. : 0 400 874 248

Injection pump
 Pump designation : PES4A90D410RS2728
 EP type number : 0 410 894 030
 Governor
 Governor design. : RSV350...750AOC2240-
 3L
 Governor no. : 0 420 232 559

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 39.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 5.7...5.9

100 s: (5.5...6.1)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 8.5...8.7

Del.quantity cm³/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 57.0...59.0

1000 : (55.0...61.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 76...84

Testing:

1st rack travel in: 11.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 850

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 62...70

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.6

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 8.50...8.70

Rack travel in mm : 2.00

Speed rpm : 385...415

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.50...16.90

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5.7 m 10
 Edition : 21.09.92
 Replaces : 06.88
 Test oil : ISO-4113

Combination no. : 0 400 876 183

Injection pump
 Pump designation : PES6A80D410RS2085X
 EP type number : 0 410 886 045
 Governor
 Governor design. : RSV350...1400A2C1052
 Governor no. : 0 420 232 406

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 80.9
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.00...9.10

Del.quantity cm³/ : 5.2...5.3

100 s: (5.0...5.4)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...7.0

Del.quantity cm³/ : 1.0...1.2

100 s: (0.8...1.3)

Spread cm³ : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 52.0...53.0

1000 : (50.5...54.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.00

Speed rpm : 1450...1455

2nd rack travel in: 4.00

Speed rpm : 1488...1501

3rd rack travel in: 4.00

Speed rpm : 1515...1545

4th rack travel in: 1680
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.9

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 500...560

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.00...9.10
2nd speed rpm : 500
Rack travel in m: 9.90...10.00
3rd speed rpm : 850
Rack travel in m: 9.50...9.70
4th speed rpm : 950
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 47.0...49.0
1000 s: (45.0...51.0)
Speed rpm : 850
Del.quantity cm³/ : 48.5...51.5
1000 s: (46.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.00
Speed rpm : 1450...1455

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.20...14.60

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.40...7.00
Del.quantity cm³/ : 10.0...12.0
1000 s: (8.5...13.5)
Spread cm³ : 2.00
1000 s: (3.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 5,2 q 2
 Edition : 21.09.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 400 876 377

Injection pump
 Pump designation : PES6A95D320RS2693Z
 EP type number : 0 410 896 913
 Governor
 Governor design. : RSV300...1300A0C2248
 -1R
 Governer no. : 0 420 233 273

Customer-spec. information
 Customer : DAF

Engine : NS156

1st version kW : 156.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference * CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 99...107

Testing:

1st rack travel in: 11.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1380...1410
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1575
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 12.30...12.40
2nd speed rpm : 500
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 290
Rack travel in m: 11.50...11.60
3rd pressure hPa : 245
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 53.5...54.5
1000 s: (51.5...56.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 21.09.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 400 875 396

Injection pump
 Pump designation : PES6A95D320RS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RSV350...1250A5C2258
 R
 Governer no. : 0 420 233 292

Customer-spec. information
 Custcmer : NAVISTAR

Engine : DT 466

1st version kW : 142.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.1...1.5

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:
 1st rack travel in: 12.40
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1355...1365
 3rd rack travel in: 4.00
 Speed rpm : 1360...1370
 4th rack travel in: 1450
 Speed rpm : 0.00...1.00

LOW IDLE 1
 Control lever position degrees: 19...27
 Setting point w/out bumper spring
 Speed rpm : 350
 Rack travel in mm : 5.7

Testing:
 Speed rpm : 100
 Minimum rack trave: 19.00
 Speed rpm : 350
 Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
 Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 900
 Rack travel mm : 13.40...13.50

Measurement
 Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 9.40...9.60
 2nd pressure hPa : 340
 Rack travel in m: 10.50...10.60
 3rd pressure hPa : 555
 Rack travel in m: 12.10...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 66.0...70.0
 1000 s: (64.0...72.0)

BREAKAWAY
 1st version

1mm rack travel less than
 full load rack tr: 12.40
 Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 135.0...155.0
 1000 s: (130.0...160.0)
 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
 Rack travel in mm : 5.60...5.80
 Del.quantity cm3/ : 11.5...15.5
 1000 s: (9.0...18.0)
 Spread cm3 : 3.50
 1000 s: (5.50)

Remarks: : NAVISTAR #1818556C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 403

Injection pump
 Pump designation : PES6A95D410RS2471
 EP type number : 0 410 896 952
 Governor
 Governor design. : RSV325...1250A2C661-
 2L
 Governor no. : 0 420 232 581

Customer-spec. information

Customer : KHD
 Engine : BF6L913C

1st version kW : 132.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm³/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.6...7.8

Del.quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel ir mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.70

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1340...1370

3rd rack travel in: 4.00

Speed rpm : 1405...1435
4th rack travel in: 1525
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.2
Speed rpm : 325
Rack travel in mm : 7.60...7.80
Rack travel in mm : 2.00
Speed rpm : 620...680

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 850
Del.quantity cm³/ 1000 s: 90.0...93.0
1000 s: (87.5...95.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ 1000 s: 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 16.10...16.50

Remarks:

:

APPLICATION

Compressor

Screw in torque-control-spring
retainer to make contact at 500 l/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 401 840 734AA

Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...1075PA746
 Governer no. : 0 421 813 477

Customer-spec. information

Customer : KHD

Engine : BF12L513

1st version kW : 300.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 11.6...12.0

100 s: (11.3...12.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.30...1.40

2nd speed rpm : 380

travel mm : 2.30...2.70

3rd speed rpm : 430

travel mm : 2.80...3.30

4th speed rpm : 700

travel mm : 5.30...5.60

5th speed rpm : 1120

travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 750

Del.quantity : 116.0...120.0

1000 : (113.5...122.5)

Spread cm³ : 4.00
 1000 : (7.50)

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

RATED SPEED

1st version
Control lever
position degrees: 50...58

On activation of the starting solenoid,
the start position must be reached.

Testing:

1st rack travel in: 9.50
Speed rpm : 1115...1125
2nd rack travel in: 5.50
Speed rpm : 1145...1175
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 15...23

Testing:

Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 315...465

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1075
Rack travel in m: 10.50...10.60
2nd speed rpm : 650
Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
 1000 s: (131.0...169.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 401 840 734AB

Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...1075PA746
 Governer no. : 0 421 813 477

Customer-spec. information
 Customer : KHD

Engine : BF12L513

1st version kW : 285.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 10.8...11.2

100 s: (10.5...11.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.30...1.40
2nd speed	rpm	: 380
	travel mm	: 2.30...2.70
3rd speed	rpm	: 430
	travel mm	: 2.80...3.30
4th speed	rpm	: 700
	travel mm	: 5.30...5.60
5th speed	rpm	: 1120
	travel mm	: 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed	rpm	: 1075
Del.quantity	: 108.0...112.0	
	1000 : (105.5...114.5)	

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 9.10
Speed rpm : 1115...1125
2nd rack travel in: 5.50
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 15...23

Testing:

Speed rpm : 100
Minimum rack trave: 8.20
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 315...465

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 10.10...10.20
2nd speed rpm : 650
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.10
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

: